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Final Report of the Commission to Study the Use of Herbicides

Maine State Legislature

Office of Policy and Legal Analysis

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STATE OF MAINE
114TH LEGISLATURE
SECOND REGULAR SESSION

Final Report of the COMMISSION TO STUDY THE USE OF HERBICIDES

December 1, 1990

Members:
Sen. Charles P. Pray
Sen. Judy C. Kany

Rep. John L. Martin
* Rep. Michael H. Michaud
Rep. Willis A. Lord

** Gregory Cyr
Michael Dann
Anthony Filauro
Charles Fitzgerald
Charles Hewett
Richard Niles
Clyde Walton
James Wazlaw

* Denotes Chair
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I. Executive Summary

The Commission to Study the Use of Herbicides was authorized by 1989 Resolves, Chapter 98 (LD 1838), enacted during the Second Regular Session of the 114th Legislature. The duties of the Commission were to study the current use of herbicides in Maine and the policy implications of that use, to review the information on the effects of herbicide use on forests, natural habitats, water quality, and other environmental impacts, and the implications of the methods for applying those herbicides. The Commission to Study the Use of Herbicides was required to report its findings, with any accompanying legislation, to the First Regular Session of the 115th Legislature by December 1, 1990.

The 13 members of the Commission to Study the Use of Herbicides were:

- The Honorable Charles P. Pray, President of the Senate
- The Honorable Judy C. Kany, Senator from Waterville
- The Honorable John L. Martin, Speaker of the House
- The Honorable Michael H. Michaud, Representative from East Millinocket
- The Honorable Willis A. Lord, Representative from Waterboro
- Mr. Gregory Cyr
- Mr. Michael Dann
- Mr. Anthony Filauro
- Mr. Charles Fitzgerald
- Mr. Charles Hewett
- Mr. Richard Niles
- Mr. Clyde Walton
- Mr. James Wazlaw

During the interim period following the adjournment of the Second Regular Session of the 114th Legislature, the Commission to Study the Use of Herbicides held five meetings and three public hearings. Public hearings were held in Machias on Monday, August 27, 1990; in Presque Isle on Tuesday, August 28, 1990, and; in Farmington on Saturday, September 15, 1990. The Commission also participated in a site visit to the Austin Pond forest herbicide study site in Bald Mountain Township on Saturday, September 15, 1990. Forest herbicide studies are conducted at the Austin Pond site by the Cooperative Forestry Research Unit, part of the University of Maine.

During its meetings and public hearings, the Commission heard extensive testimony on pesticide use from many public and private entities, including: the Department of Conservation; the Board of Pesticides Control (administrative and toxicological testimony); the Maine Potato Board; the Washington County Soil and Water Conservation District; the U.S. Forest Service; the Cooperative Extension Service; the Maine Geological Survey; the Department of Inland Fisheries and Wildlife; the Maine Department of Transportation; the University of Maine Cooperative Forestry Research Unit; the Maine Forest Products Council; the Maine

Audubon Society; Central Maine Power Company; Georgia Pacific Corporation; International Paper; Champion International; Scott Paper Company; the Paper Industry Information Office; Monsanto Chemical; Dow-Elanco; small lumber companies; potato, apple, blueberry and Christmas tree growers; a blueberry specialist from the University of Maine Department of Plant and Soil Science; experts on Integrated Pest Management systems, and many members of the public.

II. Findings and Recommendations.

Although the Commission members reached consensus on many issues relating to the use and regulation of pesticides, two issues prevented the Commission from issuing a unanimous report. A recommendation adopted by the Commission requiring the Board of Pesticides Control to adopt rules establishing posting requirements for areas treated with pesticides was opposed by Clyde Walton, from the Maine Department of Transportation. In addition, two members, Senator Kany and Charles Fitzgerald, requested a minority report that would adopt all the consensus recommendations of the Commission, but which would also move the Board of Pesticides Control from the Department of Agriculture, Food and Rural Resources to the Department of Environmental Protection. The majority recommendations of the Commission are listed below, and legislation implementing those recommendations is included as Appendix B-1. Legislation implementing the minority recommendation is included as Appendix B-2.

Consensus Recommendations of the Commission

Reporting

Finding #1. Lack of comprehensive and reliable data on the types and amount of herbicide and other pesticide applications preclude an accurate assessment of the full nature and extent of pesticide use in Maine. Existing herbicide and other pesticide reporting requirements are inadequate and the Board of Pesticides Control is not capable, at current funding levels, of analyzing pesticide use patterns and providing the Legislature with sufficient information for making policy decisions regarding pesticide use.

To improve reporting of pesticide use and improve the ability of the board to analyze that data and report to the Legislature, the Commission recommends:

Statutory Recommendation: That all certified pesticide applicators and spray contracting firms be required to report all general-use, limited-use and restricted-use pesticide applications to the board, on standardized reporting forms prescribed by the board;

Statutory Recommendation: That the Board of Pesticides Control be required to submit comprehensive biennial reports on statewide pesticide use to the Governor and the Legislature;

Statutory Recommendation: That the exemption on maintaining records and reporting on sales of general use pesticides sold in small containers by certified general use pesticide dealers be repealed and that annual reports from pesticide dealers be submitted on standardized forms prescribed by the board; and

Statutory Recommendation: That the Legislature establish and fund the following positions in the Board of Pesticides Control to accomplish these reporting recommendations: a full-time Programmer Analyst; a full-time Data Entry Specialist; and a seasonal Data Entry Specialist. It is also recommended that the Legislature authorize and fund the purchase of sufficient computer equipment by the board to accomplish these reporting recommendations.

Changes to the Board of Pesticides Control

Finding #2. The potential for conflict of interest among members of the Board of Pesticide Control require that express conflict of interest provisions governing members of the board be established and that standards for suspending members under investigation for possible violations of pesticide laws and removing members who violate such laws be established.

Statutory recommendation: That the Legislature extend the conflict of interest provisions of Title 5, section 18, of the Maine Revised Statutes to the members of the Board of Pesticides Control; and

Statutory Recommendation: That the Legislature adopt procedures for suspending a member of the board involved in an investigation of a possible violation of pesticide laws, and removing any member found guilty of more than one criminal violation or more than three civil violations.

Finding #3. The composition of the board must be geographically diverse.

Statutory Recommendation: That the Legislature require that all members of the board be selected to represent different geographic regions of the state.

Finding #4. The board must include a member who is an ecologist.

Statutory Recommendation: That the Legislature repeal the requirement that one member be a commercial applicator and require that one member be a trained ecologist.

Finding #5. The policy of the state must be to regulate pesticides in a manner which minimizes the harmful effects of pesticides and which promotes education regarding pesticide use.

Statutory Recommendation: That the Legislature amend the pesticide regulatory policy of the state to include the policy of regulating to reduce the harmful effects of pesticides and to encourage through education and other appropriate means, the reduction of, and alternatives to, pesticide use.

Ground Water Protection, Environmental Impacts and Alternatives

Finding #6. Ground water contamination from agricultural pesticides is documented in Maine. Development of a pesticide ground water protection plan and monitoring of ground water in areas susceptible to pesticide contamination are essential to prevent further contamination of ground water aquifers and associated potential increased risks to public health.

Statutory Recommendation: That the Legislature direct the Board of Pesticides Control to work with other State agencies to develop a pesticide ground water protection plan that includes monitoring of aquifers susceptible to contamination, and that funding be provided for implementing that plan.

Finding #7. Significant gaps in knowledge exist in areas essential to a full understanding of the long term environmental effects of pesticide use and the comparative economics of alternatives to pesticide use.

Statutory Recommendation: That the Legislature establish and fund a "Forestry Pesticide Research Fund" in the Department of Conservation's Forest Resource Assessment Program for the purpose of identifying and funding critical research needs relating to forest pesticide use and alternatives to forest pesticide use; and

Statutory Recommendation: That the Legislature establish and fund an "Agricultural Pesticide Research Fund" in the Department of Agriculture, Food and Rural Resources for the purpose of identifying and funding critical research needs relating to agricultural pesticide use and alternatives to agricultural pesticide use.

Statutory Recommendation: That the Legislature direct the Department of Transportation and all public utilities to conduct research on right-of-way pesticide use.

Finding #8. Title 22, section 1471-M, subsection 4, of the Maine Revised Statutes grants the board broad authority to establish environmentally sensitive areas as "critical areas" and to restrict or prohibit pesticide use in those areas. The board has established two "critical areas", but has not initiated reviews of areas which may be eligible for designation as "critical areas" or established procedures for reviewing the status of areas currently designated areas.

Administrative Recommendation: That the board establish procedures for reviewing areas designated as "critical areas", for adding areas which meet "critical areas" criteria, and for removing such designation from areas when appropriate.

Finding #9. Statutes governing municipal no-spray agreements contain economic disincentives which may be discouraging municipal adoption of no-spray policies along roadside and utility rights-of way.

Statutory Recommendation: That the Legislature amend Title 7, section 625 of the Maine Revised Statutes to require that the Maine Department of Transportation and covered utilities reimburse municipalities which enter into no-spray agreements an amount equal to the costs associated with pesticide spray programs which are avoided as a result of the no-spray agreement.

Posting of areas Treated with Pesticides and Certification of Pesticide Users

Finding #10. Existing requirements for posting areas treated with pesticides, and requirements for assuring that pesticides are applied by properly trained persons, are inadequate.

Statutory Recommendation:* That the Legislature require that all areas treated with pesticides, except household use pesticides, be posted prior to treatment; and

Statutory Recommendation: That the Legislature require all persons who use pesticides under the supervision of an applicator, except persons certified as pesticide applicators and persons using only household use pesticides, be certified as "pesticide users", and that the board be directed to establish training and certification standards for "pesticide users".

Public Health and Environmental Risk Assessments

Finding #11. The Board of Pesticides Control is too dependent upon pesticide toxicity and exposure assessments performed by the federal Environmental Protection Agency when making pesticide registration decisions in Maine. Additions to the staff of the board would expand and improve the State's ability to conduct public health and environmental risk assessments that are more applicable to Maine. Federal pesticide exposure assessments may not accurately reflect exposure conditions in Maine and may pose unknown risks to Maine pesticide applicators and the general public.

Statutory Recommendation: That the Legislature improve the board's ability to conduct public health and environmental pesticide toxicity and exposure assessments by establishing and funding the following positions within the Board of Pesticides Control: a full-time Environmental Toxicologist to perform environmental toxicity and exposure assessments; and an Assistant Toxicologist to assist the board's pesticide toxicologist in conducting public health risk assessments.

Sales of Treated Produce

Finding #12. Sales of produce treated by a pesticides prohibited in Maine pose unknown health risks to the people of Maine.

Statutory Recommendation: That the Legislature prohibit the sale of any produce treated with pesticides that are prohibited in Maine.

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*This recommendation was opposed by the Department of Transportation.

Penalties

Finding #13. Despite recent amendment by the Legislature, civil and criminal penalties for violations of pesticide laws remain generally far lower in Maine than in other New England states.

Statutory Recommendation: That civil penalties for pesticide violations be increased to up to $5,000 for first offenses and up to $10,000 for each subsequent offense, and that criminal penalties be increased to up to $25,000 or up to 6 months in prison, or both, for each violation.

Options for funding the Commission's Recommendations

Finding #14. It was beyond the scope of the Commission to review all possible options for raising the revenues necessary to pay for these recommendations. During its study, however, the Commission did identify several possible revenue sources other than General Fund Revenues which should be reviewed by the Legislature.

Administrative Recommendation: That the Legislature review the following items for their applicability and potential as sources of revenue for funding pesticide reforms recommended by this Commission:

A. Pesticide sales tax exemption. Title 36, section 1760, subsection 7 of the Maine Revised Statutes provides a sales tax exemption for certain agricultural and aquacultural products, including pesticide products. Total General Fund cost of subsection 7 exemptions was estimated at $5.475 million in FY'91. Accurate estimates of the percentage of the exemption taken for pesticide products is unknown, but it is likely that repeal of the sales tax exemption for pesticide products would raise between $.5 to $1.5 million annually in General Fund revenues.

B. Pesticide product registration fees. Pesticide product registration fees are currently set by statute at $85 per year. Each $5 increase in registration fees would generate an additional $25,000 per year in revenues to the board's dedicated account. When considering the revenue potential of this option, however, the Legislature must be aware that Maine's registration fee is currently the fifth highest in the nation.

C. Pesticide applicator license fees. Currently, commercial pesticide applicators pay $20 per year in license fees, and private applicators pay $6 every three years. Each $5 increase in applicator license fees would raise approximately $3,500 per year in revenues to the board's dedicated account. No information comparing Maine's applicator license fees to other state fees was reviewed by the Commission.

D. Pesticide manufacturer mill tax or licensing fees. Maine has no pesticide manufacturer licensing fee or manufacturer mill tax. Seven states have instituted manufacturer licensing fees ranging from $20-$250 per year and several states have imposed pesticide manufacturer mill rate taxes based upon total product sales. California, for example, has imposed a tax on pesticide manufacturers of eight mills per dollar of pesticide sales that raises $7 million annually for pesticide research and regulation. No estimate of the revenue potential for these options in Maine was made by the Commission.

Minority Recommendation

As noted, the sponsors of this minority report supported all the findings and recommendations of the Commission. However, they wanted to add an additional recommendation that would remove the board from Department of Agriculture, Food and Rural Resources and relocate it in the Department of Environmental Protection. Legislation implementing the minority report is included as Appendix B-2.

Relocating the Board to the DEP

Finding: The regulatory authority of the board extends beyond issues pertaining specifically to agricultural matters, to policy matters of significant and broad importance to public health and the environmental protection. The present location of the board in the Department of Agriculture, Food and Rural Resources does not assure that the full range of policy implications arising from pesticide use can be assessed comprehensively.

Statutory Recommendation: That the Legislature enact all the recommendations in the majority report of the Commission and move the board from Department of Agriculture, Food and Rural Resources to Department of Environmental Protection.

III. Herbicide Use in Maine

A. Federal and State Regulatory Background

1. Federal Regulation

Herbicides and all other pesticides are regulated by both federal and state laws. Although federal regulation of pesticides extends back to the first decade of this century, with the passage of the Federal Food, Drug, and Cosmetic Act of 1906 (FFDCA)[1] and the Federal Insecticide Act of 1910 (FIA)[2], the existing federal regulatory structure is derived primarily from the Federal Insecticide, Fungicide, and Rodenticide Act of 1947 (FIFRA)[3]. The purpose of FIFRA originally was to protect farmers from ineffective and toxic agricultural pesticides by requiring the registration of any pesticide shipped through interstate commerce. Since their original enactment, both the FFDCA and FIFRA have been amended several times. In 1954 and 1958, amendments to the FFDCA required the United States Food and Drug Administration (USFDA) to set pesticide tolerances on raw food products and prohibited residues of potentially carcinogenic pesticides from processed foods. Over time, amendments to FIFRA have shifted its emphasis from pesticide regulation of agricultural products and the protection of farmers to the protection of the general public health and the environment. In the 1970's and 1980's, FIFRA amendments led to the transfer of pesticide regulatory and enforcement authority from the USDA to the Environmental Protection Agency, as well as adding requirements for public health risk assessments prior to pesticide registration, the establishment of protocols for reviewing pesticides risks and the establishment of timetables for the completion of those risk assessments.

The most recent amendments to FIFRA occurred in 1988 during Congressional debate on the reauthorization of the original bill. Perhaps the most significant changes in FIFRA occurred in the area of pesticide review timetables. In the 16 years between the 1972 amendments requiring the EPA to conduct health testing of pesticides prior to marketing and the 1988 reauthorization debates, health risk assessments had begun on fewer than 2% of the pesticides subject to review.[4] Estimates during the reauthorization debate were that, at the existing pace of EPA review, all pesticides reviews would not be completed until 2024. Congress recognized the need to expedite the review process by enacting as part of the 1988 amendments to FIFRA a nine year timetable for EPA completion of the reviews of some 600 pesticide active ingredients (approximately 24,000 products) already on the market. To assist EPA in speeding up of the review process, the 1988 amendments also imposed fees on pesticide manufacturers with revenues dedicated to assisting the agency in paying for new costs associated with the expedited review process. Fees assessed

for re-registration were $150,000 for chemicals registered for use on crops destined for human or animal consumption; $75,000 to $150,000 for chemicals without a major food or feed use, and; a sliding fee of 0.5 to 1.5 percent of revenues for manufacturers with annual revenues of $40 million or less or 150 or fewer employees.

The original 1988 FIFRA reauthorization bill included additional provisions which became controversial and which were ultimately dropped from the final bill. Those provisions included federal pre-emption of state standards for pesticide food residues, protection of farmers from liability for pesticide pollution and the federal regulation of pesticides in ground water.

Despite the intentions of Congress to speed up the reregistration of pesticides by the EPA, recent reports have criticized EPA's performance over the last two years. In a March 1990 report on the reregistration progress for lawn care pesticides, for example, the Government Accounting Office (GAO) found that not one of the 34 most commonly used lawn care pesticides has completed the reassessment process. In that report, the GAO concludes that until the EPA "completes its reassessments as part of the reregistration process, the public may be at risk from exposure to potentially hazardous lawn care pesticides" By 1989, only one of the 600 active ingredients required to be reassessed by the 1972 FIFRA amendments had completed the entire process.

In another area of federal action affecting pesticide regulations, Congress is now considering amendments to the 1985 Farm Bill (PL 99-198) which, among others things, may effect pesticide applicators. Although differing versions of the amendments pertaining to pesticides have been reported by the chambers to the House and Senate Conference Committee, both versions would impose additional record keeping provisions on pesticide applicators. Since a Conference Committee report has not yet been issued, the final implications of these amendments on the Board and pesticide applicators in Maine is not known. However, it is likely that some additional record keeping requirements will be included in the final bill.

2. State Pesticide Regulation

Provisions in a 1975 amendment to FIFRA allowed for the transfer of primary enforcement authority for pesticide regulation from the Environmental Protection Agency to the states, beginning in 1978. Although those provisions granted broad authority to states to regulate pesticide use, they also set limitations on that authority. The two major areas of delegation to the states allow states to certify restricted use pesticide applicators

and give states primary enforcement authority for pesticide use violations. Limitations of state authority include the prohibition of states from enacting pesticide regulations which are more lenient than the those included in FIFRA, and the prohibition of states from imposing new or different pesticide labeling or packaging requirements. To assume primary enforcement authority under FIFRA, states must designate an agency with responsibility for the certification program. Prior to assumption of FIFRA enforcement authority, the EPA must find that the agency designated by the state has the necessary legal authority and personnel necessary for enforcement actions and that sufficient funding has been provided to carry out the functions required by FIFRA. In anticipation of the FIFRA provisions allowing for state authority for pesticide regulation, Maine enacted the necessary authorizing legislation and subsequently assumed primary enforcement authority sometime in the late 1970's.

In Maine, herbicides and other pesticides are regulated under the Maine Pesticide Control Act of 1975[5] and the Maine Board of Pesticide Control Act[6].

The Maine Pesticide Control Act of 1975 allows the state to regulate pesticide use, sales and registration. Although the Act gives primary enforcement authority to the Commissioner of the Department of Agriculture, Food and Rural Resources, all regulatory powers are exercised by the Board of Pesticide Control.

The Board of Pesticides Control

The Maine Board of Pesticides Control Act establishes the Board of Pesticides Control, defines its purpose and policy and establishes the powers of the Board to regulate pesticide sales and use. The responsibilities of the Board are to regulate the sale and application of chemical insecticides, fungicides, herbicides and other chemical pesticides, to assure the safe, scientific and proper use of pesticides, to safeguard the public health, safety and welfare and to protect the natural resources of the state.

Currently, the Board of Pesticides Control consists of seven public members appointed by the Governor for four year terms. By statute, the membership of the Board must consist of one person who has experience in agricultural chemical use, one person who has experience in forest management chemical use, one person who is a commercial applicator, one person from the medical community, one person who is a scientist from the University of Maine system specializing in agronomy or entomology with knowledge of integrated pest management practices, and 2 persons who are public members representing different geographical regions of the state.

The overall goal of the Board of Pesticides Control is to regulate pesticide use in a manner that allows for the benefits of their use while safeguarding the public health and environment. As presented by the Board's Director, the programmatic objectives of the Board include:

a. Registration and Review:

(1) Ensure that all products sold and used in Maine are properly registered with the Board;

•In 1989, 484 companies registered 5,023 products in Maine.

(2) Conduct health and environmental assessments of selected pesticides as mandated by statute;

•The Board is presently conducting public health risk assessments on the fungicides metalaxyl, chlorothalonil, anilazine and the Ethylene bis dithio Carbonate (EBDC) contaminant, ethylene thiourea. In addition, it has contracted out for environmental risk assessments on the herbicides glyphosate and triclopyr

(3) Further restrict the use of specific pesticides when health or environmental problems are identified.

b. Certification and licensing:

(1) Examine and license all persons required to be licensed;

•In 1989, there were 1871 private applicators, 1005 commercial applicators, 88 firms, 73 restricted use dealers and 630 general use dealers licensed. 751 exams were administered and the Board licensed 568 people for the first time.

(2) Improve all training materials and exams;
(3) Improve the computer system to keep better records of all licenses and continuing education credits;
(4) Upgrade training programs for new licensees and continuing education.

c. Enforcement:

(1) Provide appropriate training for enforcement staff;
(2) Compliance inspections;

•The Board conducts a minimum of 159 use inspections, 12 dealer and 20 marketplace inspections per year.

(3) Maintain an active presence at spray sites;
(4) Respond immediately to complaints;

•In 1989, the Board investigated 46 complaints, 9 of which were deemed violations.

(5) Enforce violations;

•In 1989, the Board took 15 enforcement actions, resulting in fines totalling $3,450.

d. Education:

(1) Distribute newsletters, brochures, etc.;
(2) Public speaking;
(3) Participation in public forums and shows;
(4) Respond to information requests.

The staff of the Board of Pesticides Control consists of ten full time and three seasonal positions. Three of these full time positions - a Certification and Licensing Specialist, a Pesticide Toxicologist and a Public Information Officer - were added to the Board in 1987 after a review of the need for uniformity in pesticide regulations by the Joint Standing Committee on Agriculture. Although the Board reports that those newly created positions are helping it reach its enforcement objectives, it has suggested, and the Commission heard testimony to the effect, that additional resources would be needed for new initiatives.

Operating revenues for the Board are derived from three sources; General Fund appropriations, the Pesticide Control Fund and federal funds. Recent changes at the Department of Agriculture will result in the shifting of the Director's salary and some agency administrative costs from General Fund dollars to the dedicated revenues. In FY 91, the Board's budget will be reliant entirely on dedicated revenues and federal funding.

Revenues for the Pesticide Control Fund come primarily from annual product registration fees, which are currently set by statute at $85.00 per year per product.[7] In 1989, product registration fees raised approximately $427,000 in dedicated revenues for the Board. Relative to other states, Maine's registration fee is high; more than double the nationwide average of $38. Only four states (California, Iowa, Louisiana and Minnesota) have higher annual registration fees than Maine.[8]

Lower annual registration fees, however, do not indicate lower commitment to comprehensive pesticide regulations. Many states have implemented fee structures which attempt

to raise additional money while diversifying the funding sources for pesticide regulation. Many of those states with lower registration fees than Maine have more diverse revenue sources. Examples of this funding diversification include the imposition of an annual company licensing fee in addition to product registration fees, and implementing a variety of fees and taxes to generate new revenue. Annual company licensing fees have been instituted by seven states and range from $20 to $250 per year. Other states revenue structures focus upon the manufacturer's "ability to pay" by imposing fees based upon product sales.[9] At the federal level, the EPA has incorporated an "ability to pay" schedule in its own registration fee structure by imposing sliding fees for registration based on a company's annual revenues.

An organizational chart of the Board of Pesticides Control and a list of staff members is attached as Appendix C.

3. FIFRA and federal preemption

FIFRA is often interpreted as imposing minimum standards on states; standards which do not prohibit states from enacting more stringent regulations. Although FIFRA does delegate broad authority to the states, it also puts limits on that authority, particularly in the areas of labeling and packaging of pesticides. Under FIFRA, states may also adopt registration criteria for alternative or additional uses of federally registered pesticides in order to meet "special local needs" requirements.

One area where the boundary between state and federal authority remains unclear is the question of whether or not FIFRA preempts municipal regulation of pesticide use. In 1987, the Joint Standing Committee on Agriculture reviewed the preemption issue and recommended that the question be left to the courts to decide. Since then, state and federal courts decisions have been contradictory, both upholding the validity of local ordinances as well as striking them down. Early in 1990, the Maine Supreme Judicial Court issued an opinion upholding an ordinance enacted by the town of Lebanon which banned the commercial application of pesticides for non-agricultural purposes. Although other state courts have decided the issue in favor of municipalities as well, federal courts appear to be going the other way. Because of the disagreement among the state and federal court decisions, it is doubtful that the final word has been spoken on the issue.

An analysis of the local pesticide regulations and FIFRA preemption issues is attached as Appendix D.

4. Municipal regulations

In 1987, a survey of municipalities was done by the Joint Standing Committee on Agriculture in an attempt to determine the extent of municipal pesticide regulation. In its report, the Committee listed 17 municipalities which it determined had enacted ordinances affecting pesticide use. Other municipalities which were thought to have pesticide ordinances were reportedly unclear as to their legal status or level of enforcement. The Committee concluded that the uncertainty at the municipal level regarding pesticide ordinances was an inherent difficulty of municipal government, arising from lack of full-time code enforcement officers and that uncertainty was a complicating factor to pesticide applicators and landowners whose property was located in more than one town. In an attempt to clarify that uncertainty, the Committee recommended statutory changes requiring that all municipal ordinances affecting pesticide use be filed with the Board of Pesticides Control in order for the ordinance to have legal effect. That recommendation was acted upon by the 113th Legislature and became law in 1988.[10] Since enactment of that law, the following 13 municipalities have filed pesticide ordinances with the Board:

• Arrowsic (1984)	*Ban on foliar herbicide use in brush control.*
• Lebanon(1983)	*Ban on commercial spraying of herbicides for non-agricultural reasons.*
• Limerick(1988)	*Ban on herbicide spraying along right of ways.*
• Limestone(1970)	*Ban on Trafton Lake subdivision aerial spraying of any pesticide, except fungicides.*
• Newburgh(1980)	*Ban on all herbicide applications on roadside right of ways.*
• New Gloucester(1982)	*Fertilizer and pesticide applications must be consistent with standards of the U.S. Department of Agriculture.*
• New Sweden(1990)	*Ban on aerial application of pesticides.*
• Owls Head(1970)	*Ban on all chemicals that "kill or defoliate plants or trees".*

As with all estimates of herbicide use in Maine, care should be taken not to place absolute reliance on either the reported or estimated use figures. Data gaps, reporting interpretation and compliance questions, and possible double counting of use raise questions as to the reliability of information available to the Commission with regards to accurately portraying actual totals. Estimation of the types and amount of active pesticide ingredients was particularly problematic. Applicators currently report the trade name of the pesticide used, but many trade name pesticides include more than one active ingredient and some active ingredients are marketed under several different trade names. For example, 2,4-D, a broadleaf herbicide, is marketed and may be reported to the board under the trade names "Weed Rhap", "Weedone" or "Esteron 99". The herbicide marketed under the product name Lesco 3-Way, on the other hand, contains three distinct active ingredients. Due to problems such as these, estimates of total use should be interpreted as conservative, and the Commission recognizes that actual use in some sectors may be significantly higher than actual reported usage.

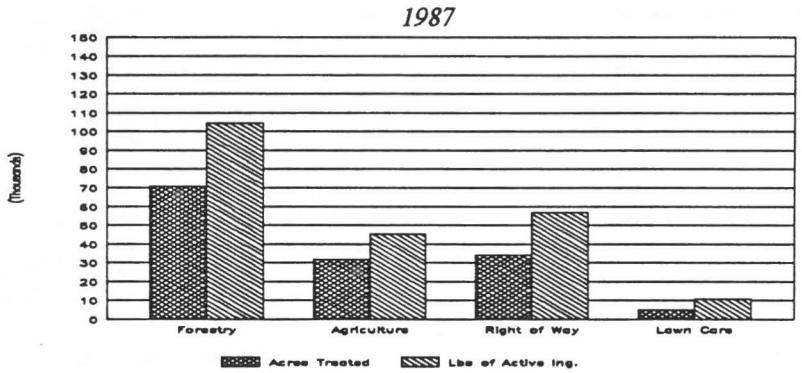
Figure 1 presents a summary of reported herbicide applications for the forestry, agriculture, right of way and lawn care sectors for the years 1987, 1988 and 1989. This summary is based on compilations of commercial applicator reports for those years. Total reported acreage treated with herbicides for those years indicate an increasing trend, from approximately 142,000 acres in 1987 to 177,000 acres in 1989. The amount of herbicides use, measured in pounds of active ingredient (Lbs ai) also indicates an increase over that period, from approximately 218,000 Lbs ai in 1987 to 278,000 Lbs ai in 1989.

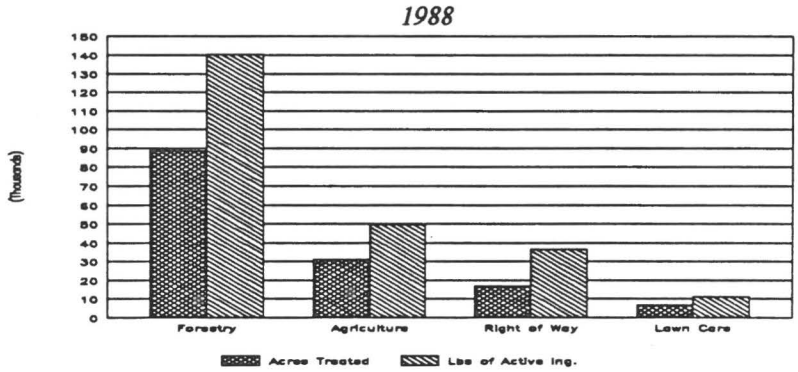
Figure 2 presents a comparison of total estimated and reported use for those same four sectors for the year 1987, the most current year for which such comparative estimates could be made. For forestry, estimates of acreage treated with herbicides and reported acreage agree fairly well, suggesting that the state's reporting requirements presently capture most actual herbicide use in that sector. For right of way and lawn care, no reliable independent measure of use was available and, therefor, no estimates different than the reported use were available. In the agricultural sector, however, estimates of total use are substantially higher than reported use. The Commission estimates that agricultural herbicide use may be as much as six times greater than reported use. The difference between reported and estimated use in that sector is due primarily to the greater reliance of farmers on private applications of herbicides, unlike the other sectors which rely more heavily on commercial applicators.

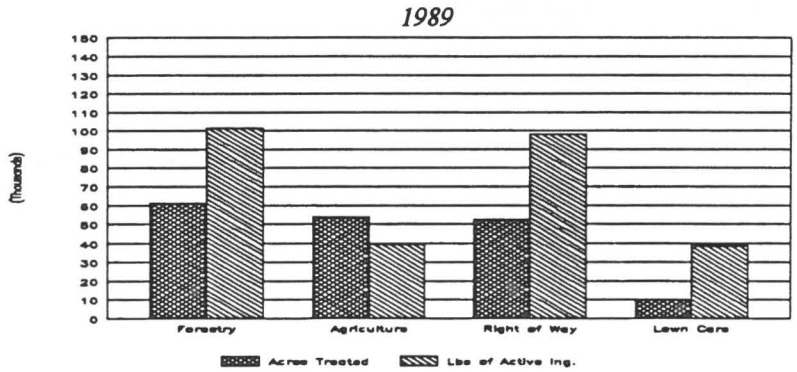
FIGURE 1

Summary of Reported Herbicide Applications, 1987, 1988 and 1989

Sector	1987 Acres	1987 Lbs ai	1988 Acres	1988 Lbs ai	1989 Acres	1989 Lbs ai
Forestry	70,584	104,565	88,637	140,388	61,296	101,624
Agriculture	31,818	45,226	30,959	49,586	53,603	39,525
Right of Way	34,085	56,988	16,815	36,340	52,248	97,962
Lawn Care	5,211	10,792	6,867	11,037	9,694	38,484
Total	141,698	217,571	143,278	237,351	176,841	277,595







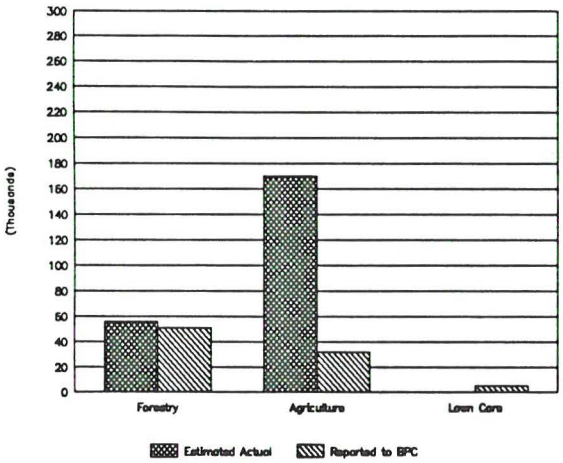
**Compiled by OPLA from Cline, 1990. Original data from BPC records.*

FIGURE 2

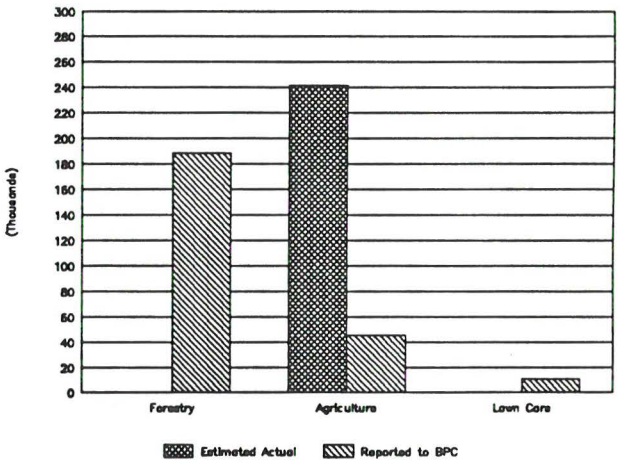
1987 Reported v. Estimated Herbicide Treatments *(1)*

Sector	Estimated		Reported	
	Acres	Lbs ai	Acres	Lbs ai
Forestry	56,000 *(2)*	n.r.	51,077 *(3)*	188,689 *(4)*
Agriculture	170,000 *(5)*	241,637 *(6)*	31,818 *(4)*	45,226 *(4)*
Lawn Care	n.r.	n.r.	5,211 *(4)*	10,792 *(4)*

Estimated v Reported Acres Treated



Estimated v. Reported Lbs ai



Notes:

(1). Compiled by OPLA. Reported data derived from BPC records as published by Ballogh (1990) and Cline (1990).

(2). Balogh (1990), from McCormack (1988).

(3). Balogh (1990).

(4). Cline (1990).

(5). OPLA estimate, from 1987 Census of Maine Agriculture and DAFRR estimates.

(6). Derived by OPLA; assumes same application rate as 1987 BPC data.

Figure 3 presents average herbicide use by sector for the years 1987-1989 using both estimated and reported use. As can be seen, the agricultural sector is the largest user of herbicides, accounting for slightly more than 60% of the acres treated, and slightly less than 60% of the pounds of active ingredient applied. Forestry is the second largest user, accounting for approximately one quarter of the total acreage and active ingredients applications. Right of way treatments account for slightly more than 10% of the acres and active ingredients and lawn care less than 5% of each.

3. Herbicide Use by Sector

Forestry

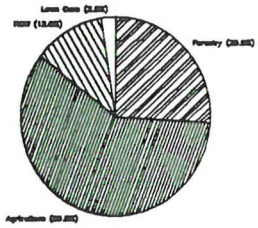
Maine has approximately 17 million acres of commercial forest lands, approximately 50% of which is owned by 12 industrial timber companies. In 1989, industrial and non-industrial timberland owners harvested a reported 326,057 acres, or approximately 2% of the total commercial forest lands. Clearcutting, the timberland management practice most often associated with herbicide treatment, accounted for approximately 44% of the acres harvested in 1989. Industrial landowners accounted for approximately 80% of the reported 94,807 acres of commercial clearcuts and approximately 95% of the reported 50,550 acres of silvicultural clearcuts. Partial cutting methods, such as shelterwood cuts, selection cuts, diameter limits cuts and single species cuts, accounted for the remaining 56% of the acreage harvested in 1989. Chemical release using herbicides reportedly occurred on 87,481 acres in 1989, nearly 80% of which occurred on industrial forest lands. Figures 4 & 5 present summaries of the silvicultural and harvesting trends in Maine for 1989.

The goal of forest management early in the rotation is to remove those less valuable species of plants which compete with the desired crop species for the limited amounts of nutrients, water and light available at the site. Competition at the site, if not controlled, can result in substantially reduced growth among the desired species, and, in some cases, may result in the elimination of the desired species from the site. In Maine, species which typically compete with the softwood species desired by the forest industry include hardwoods and brush species such as raspberries, pin cherry and red maple sprouts. Management practices designed to control competition and increase yields of desired species include such practices as initial site preparation, softwood release and precommercial thinning. Although chemicals methods are used by the forest industry in all three of these practices, the majority of the herbicides used are for softwood release. Softwood release occurs in late summer and early fall, during the period of time when hardwood and

FIGURE 3

Summary of Estimated Average Maine Herbicide Use, by Sector

Estimated Avg. Treated Acres, by Sector (1987–1989)		
Sector	Acres	Percent
Forestry	74,111	25.9%
Agriculture	170,000	59.5%
ROW	34,400	12.0%
Lawn Care	7,250	2.5%
Total	285,761	100.0%



Estimated Avg. Lbs A.I. by Sector (1987–1989)		
Sector	Lbs AI	Percent
Forestry	115,500	26.2%
Agriculture	242,000	54.8%
ROW	63,800	14.5%
Lawn Care	20,000	4.5%
Total	441,300	100.0%

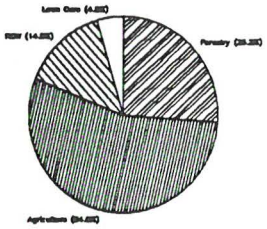


FIGURE 4

Summary of Maine Forestry Silvicultural Activity

	Acreage Class					Class of Ownership			
	<1,000	1,001–5,000	>5,000	Total Acres	Row Percent	IND	NON-IND	Total Acres	Row Percent
SILVICULTURAL									
Site Preparation									
Prescribed Burn	55	2	52	109	2.4%	52	55	107	2.4%
Herbicide Treatment	64	29	802	895	19.9%	817	76	893	19.9%
Mechanical	225	547	2,713	3,485	77.6%	2,655	828	3,483	77.7%
Total Acres	344	578	3,567	4,489	100.0%	3,524	959	4,483	100.0%
Column Percent	7.7%	12.9%	79.5%	100.0%		78.6%	21.4%	100.0%	
Tree Planting & Seeding									
Seedlings	167	308	7651	8,126	99.7%	7,837	289	8,126	99.8%
Direct Seedlings	16	2	4	22	0.3%	2	18	20	0.2%
Total Acres	183	310	7,655	8,148	100.0%	7,839	307	8,146	100.0%
Column Percent	2.2%	3.8%	93.9%	100.0%		96.2%	3.8%	100.0%	

From: 1989 Silvicultural and Harvesting Report; Department of Conservation.

FIGURE 5

Summary of Maine Forestry Harvesting Practices

	Acreage Class					Class of Ownership			
	<1,000	1,001–5,000	>5,000	Total Acres	Row Percent	IND	NON-IND	Total Acres	Row Percent
HARVESTING									
Clearcutting Methods									
Silvicultural Clearcut	542	351	49,657	50,550	34.8%	48,570	2,469	51,039	35.1%
Commercial Clearcut	1,637	1,637	91,533	94,807	65.2%	75,365	18,855	94,220	64.9%
Total Acres	2,179	1,988	141,190	145,357	100.0%	123,935	21,324	145,259	100.0%
Column Percent	1.5%	1.4%	97.1%	100.0%		85.3%	14.7%	100.0%	
Partial Cutting Methods									
Shelterwood cuts	1,907	308	45,566	47,781	26.4%	25,250	113,527	138,777	50.8%
Selection cuts	10,086	3,418	47,291	60,795	33.6%	33,905	26,947	60,852	22.3%
Single Species	885	156	4,465	5,506	3.0%	1,893	3,613	5,506	2.0%
Diameter Limit	4,482	945	52,645	58,072	32.1%	27,950	31,328	59,278	21.7%
Other	523	107	7,916	8,546	4.7%	3,578	4,934	8,512	3.1%
Total Acres	17,883	4,934	157,883	180,700	100.0%	92,576	180,349	272,925	100.0%
Column Percent	9.9%	2.7%	87.4%	100.0%		33.9%	66.1%	100.0%	
ACRES HARVESTED									
Partial Cut Methods	17,883	4,934	157,883	180,700	55.4%	92,576	89,349	181,925	55.6%
Clearcut Methods	2,179	1,988	141,190	145,357	44.6%	123,935	21,324	145,259	44.4%
Total Acres	20,062	6,922	299,073	326,057	100.0%	216,511	110,673	327,184	100.0%
Column Percent	6.2%	2.1%	91.7%	100.0%		66.2%	33.8%	100.0%	

From: 1989 Silvicultural and Harvesting Report; Department of Conservation.

other target species are actively growing and softwood species have become dormant. The timing of the chemical release is a critical factor. Chemicals sprayed on a site too early can result in damage to the desired softwood species, and applications made too late can be ineffective at killing the target weed species.

The use of herbicides for softwood release in conjunction with clearcutting has escalated dramatically in Maine during the past decade; from approximately 9,000 acres of clearcuts in 1980 to approximately 90,000 acres in 1989. Figure 6 presents a summary of estimated forestry acreage treated with herbicides from 1976 to 1989. It is not clear, however, whether or not that trend will continue into the future. Estimates of acreage treated with herbicides during the recently completed 1990 spray season indicate a substantial break in recent trends, with total acreage treated estimated at between 42,000 to 45,000 acres.[14] The decrease in 1990 acreage treated with herbicides is at least partially attributable to recent changes in ownership of some of Maine's industrial timberlands and the overall "leveling out" of some industrial use. Although some of the increase seen during the 1980's can be explained as an industrial response to damage to the forest during the spruce budworm epidemic of the late 1970's and early 1980's, trends during the decade do show a constant increase in the use of commercial clearcutting and chemical release as a forest management tool among industrial landowners.[15]

The benefits of herbicide use as a method for softwood release are derived from their lower cost, relative to alternative methods, and from some indications that chemical release may be more effective than manual release in increasing yields over the rotation period of a stand. Studies of the benefits of chemical release relative to manual release, or no release, suggest that chemical release both increases the absolute volume of spruce-fir per acre and increases the yield of merchantable wood per acre. Studies on balsam fir sites, for example, show an increase in total fir volume after 28 years ranging between 157%-265% over control plots receiving no release treatments and approximately 41%-100% increases over manual release sites. Yield increases of 64% were reported for manual release treatments over control plots receiving no treatment. Total yields of approximately 48 cords/acre after 50 years for chemically released sites as compared to approximately 10 cords/acre on sites with no silviculture are reported in other studies. More detailed data on these studies can be found in Appendix E.

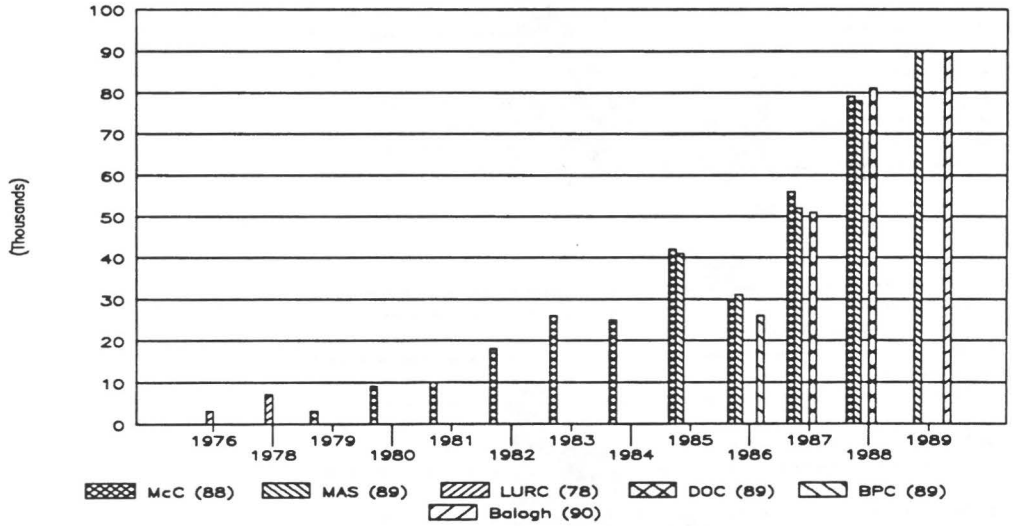
Figure 7 presents a summary of the reported forestry herbicide use for the years 1987-1989. As can be seen, the principle herbicides used in the forestry sector are Roundup and Garlon. As reported to the state, Roundup accounted for approximately 75% of the acres treated during that period and approximately 70% of the total LBS ai applied.

FIGURE 6

ESTIMATED FORESTRY ACREAGE TREATED WITH HERBICIDES; 1976-1989

Year	McC (88)	MAS (89)	LURC (78)	DOC (89)	BPC (89)	Bal (90)
1976	-	-	3,000	-	-	-
1978	-	-	7,000	-	-	-
1979	3,000	-	-	-	-	-
1980	9,000	-	-	-	-	-
1981	10,000	-	-	-	-	-
1982	18,000	-	-	-	-	-
1983	26,000	-	-	-	-	-
1984	25,000	-	-	-	-	-
1985	42,000	41,000	-	-	-	-
1986	30,000	31,000	-	-	26,000	-
1987	56,000	52,000	-	51,000	-	-
1988	79,000	78,000	-	81,000	-	-
1989	-	90,000	-	-	-	90,000

Estimated Acres of Herbicide Treated Forest in Maine, 1976-1989



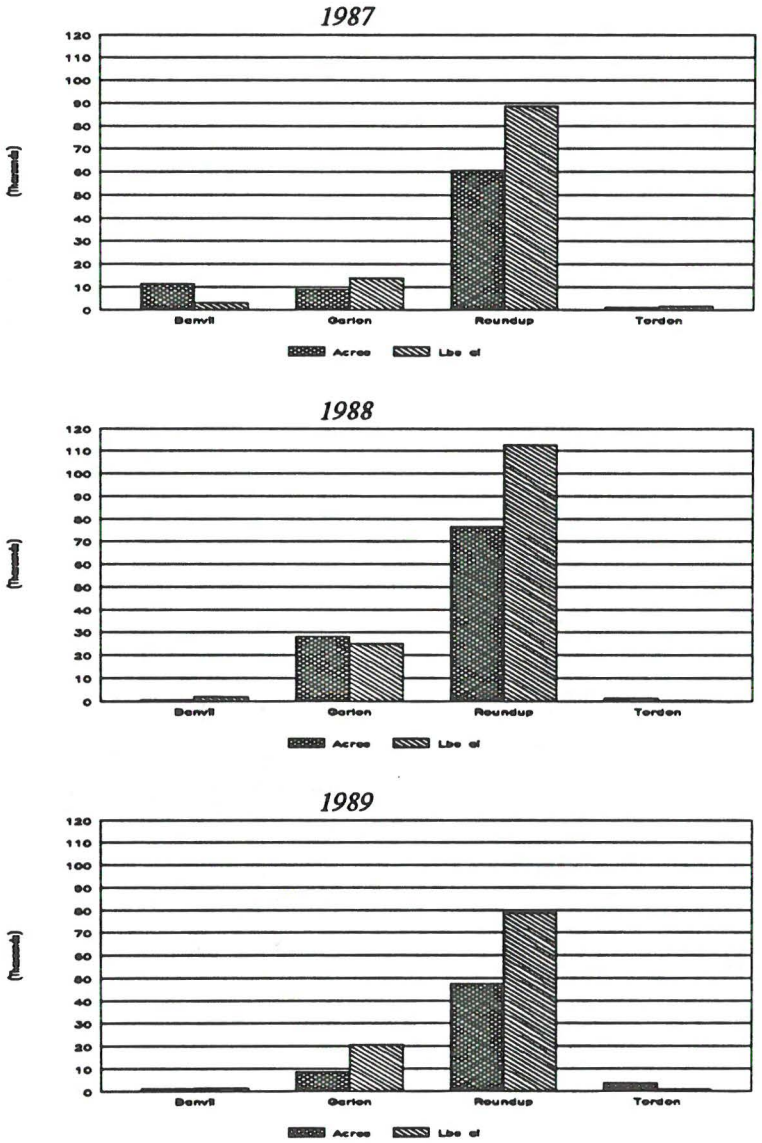
Interpolated by OPLA, from data presented by Cline (90) and Balogh (90)

FIGURE 7

Reported Forestry Herbicide Use; 1987, 1988 and 1989

	1987		1988		1989	
Herbicide	Acres	lbs ai	Acres	Lbs ai	Acres	Lbs ai
Banvel	11,284	2,818	441	1,919	952	1,161
Garlon	8,899	13,927	28,190	25,225	8,649	20,638
Roundup	60,555	88,602	76,491	112,742	47,453	78,879
Tordon	1,006	1,684	1,280	125	3,513	587
Total	81,744	107,031	106,402	140,011	60,567	101,265

Most commonly used



*From Cline (1990)

Figure 8 presents a summary of a recently completed Timberland Survey, showing total herbicide use by the major industrial forestry landowners responding to the survey. Those results also show Roundup and Garlon as the principle herbicides in use in the forestry sector.

Most forestry applications of herbicides are aerial applications, using helicopters flying at low altitude under acceptable wind and weather conditions. In sensitive areas, other methods of application are sometimes used, including skidder-mounted sprays or hand-held spray units. Typically, pesticide free "buffer zones" are established by industrial forest land owners to protect sensitive environmental areas. Although these "buffer zones" vary, depending on the landowner and the area under protection, the typical range is from 100-250 feet of buffer around sensitive areas, particularly around water bodies. The Board of Pesticides Control has adopted rules prohibiting the application of pesticides directly on "sensitive areas", however, those rules require no buffer zones. As defined by the Board's rules, sensitive areas include public wells, drinking water supplies and water bodies such as streams, brooks, rivers, ponds, lakes, estuaries and marine waters.[16]

Agriculture

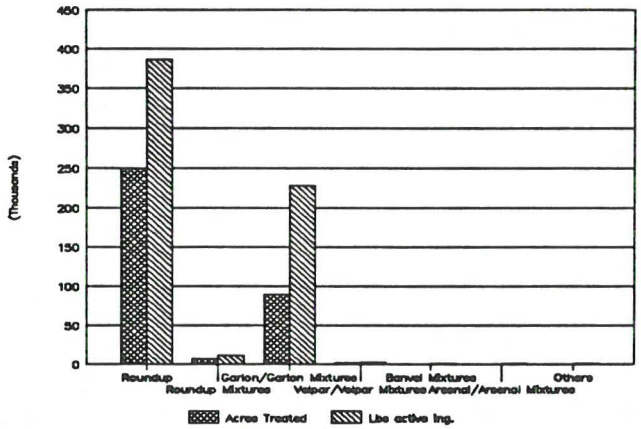
Agriculture is the largest single user of herbicides in Maine, accounting for approximately 60% of the total acres treated with herbicides and approximately 55% of the total pounds of active ingredient used. Figure 9 summarizes agricultural pesticide use as reported by commercial applicators for the years 1987-1989. The fungicides Maneb and Mancozeb are the dominant pesticides used in the agricultural sector. As presented in Figure 9, Velpar and Diquat are significant among the herbicides used, although comparable data on other agricultural herbicides such as Atrazine, Metribuzin and Linuron was not available to the Commission. Figure 10 summarizes the agricultural acres treated with pesticides by commodity type.

As can be seen, the U.S. Census reports that approximately 138,000 acres were treated with herbicides in the agricultural sector in 1987. According to census data, potatoes represent the single largest herbicide user, accounting for 60-70% of the total acreage treated in the agricultural sector in that year.[17] Dairy farms and fruits and nuts (primarily apples and blueberries) each accounted for 10-12% of the acreage treated with herbicides.[18] Grains, vegetables, horticultural specialties, general crop and livestock farms, poultry and eggs, beef cattle and other livestock account for the remaining 6-8% of the herbicide treated

Figure 8.

Summary of 1990 Herbicide Timberland Survey Data
(Totals for 1985-1991)

Herbicide		Acres	Lbs ai
Roundup		248,623	386,764
Roundup Mixtures	(1)	6,914	11,158
Garlon/Garlon Mixtures	(2)	89,855	228,354
Velpar/Velpar Mixtures	(3)	1,216	1,939
Banvel Mixtures	(4)	64	438
Arsenal/Arsenal Mixtures	(5)	337	465
Others	(6)	186	411
Total		347,195	629,529



Notes:

(1). Includes Roundup mixtures with Escort;, Garlon 3A; Garlon 4; Garlon; 2,4-D; Princep and Oust.

(2). Includes Garlon 3A, Garlon 4, Garlon 4 with Roundup and Roundup or Garlon 3A/4.

(3). Includes Velpar L, Velpar with Garlon 4, Velpar L with Garlon 3A, and Velpar L with 2,4-D.

(4). Includes Banvel with Banvel 720 and Banvel with Garlon 4.

(5). Includes Arsenal and Arsenal AC.

(6). Includes Rodeo and Monsanto mixtures.

Source: Balogh (1990): 98.

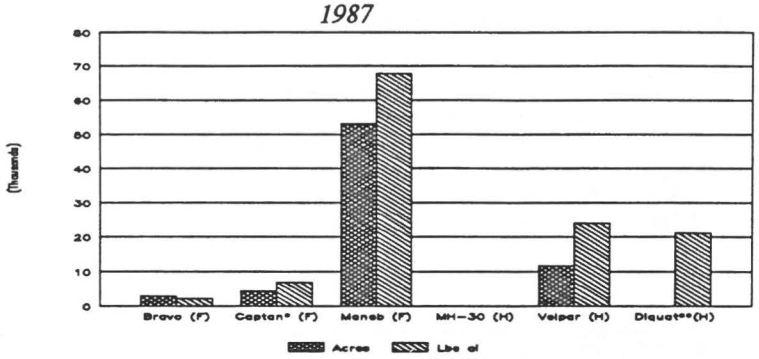
FIGURE 9

Reported Agricultural Pesticide Use; 1987, 1988 and 1989

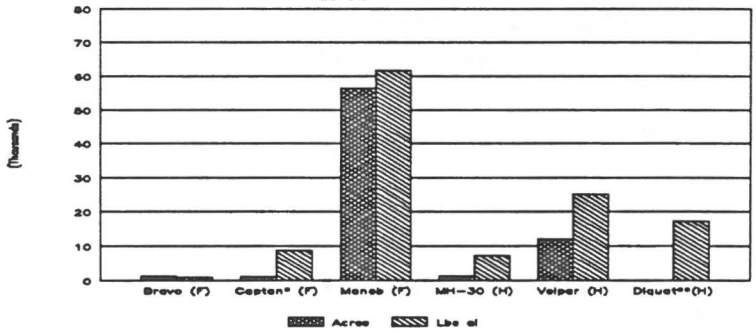
	1987		1988		1989	
Herb/Fung	Acres	lbs ai	Acres	Lbs ai	Acres	Lbs ai
Bravo (F)	2,897	2,225	1,149	899	2,682	1,974
Captan* (F)	4,441	6,815	1,087	8,696	3,191	4,184
Maneb (F)	53,030	67,757	56,452	61,641	50,792	49,903
MH-30 (H)	-	-	1,298	7,153	724	12,343
Velpar (H)	11,670	24,019	12,073	25,179	12,106	21,638
Diquat**(H)	-	21,207	-	17,254	-	5,544
Total	72,038	122,023	72,059	120,822	69,495	95,586

**includes Captec; **Diquat estimated by OPLA.*

1987



1988



1989

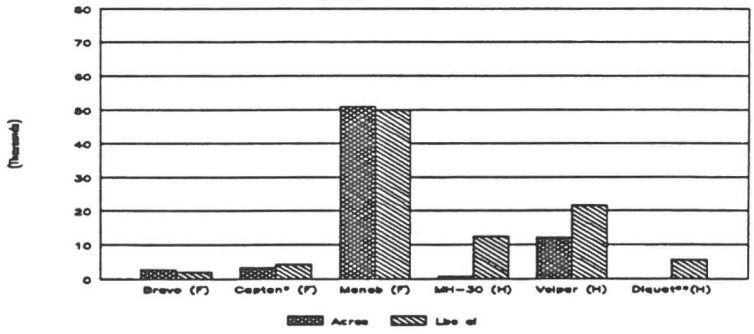
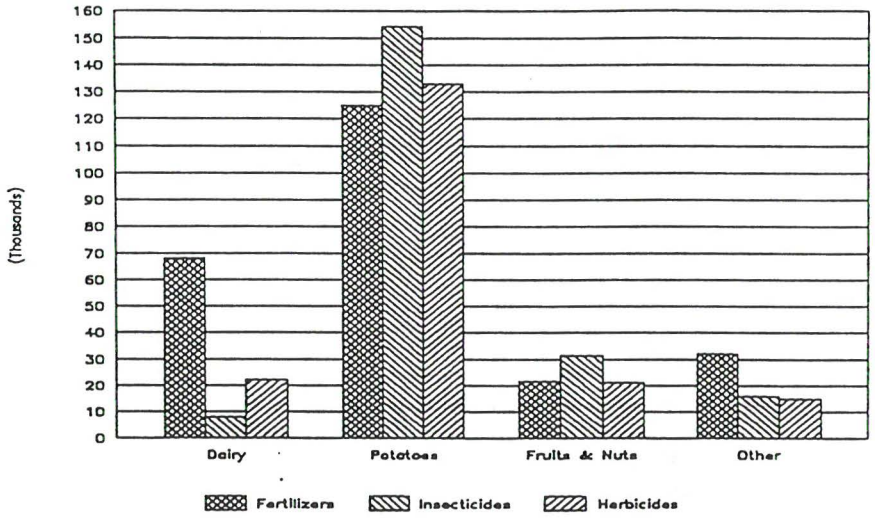


FIGURE 10

1987 Agricultural Chemical Use by Farm Type

Farm Type		Acres Treated		
		Fertilizers	Insecticides	Herbicides
Dairy		68,084	8,117	22,209
Potatoes		124,976	154,351	132,912
Fruits & Nuts		21,652	31,477	21,077
Other	(1)	32,187	15,954	15,064
Total		246,899	209,899	191,262

1987 Maine Agricultural Chemical Use



Source: 1987 Census of Maine Agriculture, U.S. Dept. of Commerc

Notes: (1). Includes Grains, Vegetables, Horticultural Specialties, General Crop and Livestock Farms, Poultry and Eggs, Beef cattle and other Livestock.

agricultural acreage in the state. More acres were reported treated with fertilizers and insecticides than with herbicides in 1987. Roughly 250,000 acres were reportedly treated with fertilizers and 210,000 acres treated with insecticides.

Estimates by the Department of Agriculture, Food and Rural Resources of total agricultural acres treated with pesticides differ from the estimates provided by the census. According to the DAFRR estimates, roughly 200,000 agricultural acres were treated with herbicides. The discrepancy between the Census data and the DAFRR estimates is unexplained, however, the two estimates could best be interpreted as "low-end" and "high-end" estimates of actual treated agricultural acreage. Estimates of Agricultural acreage treated with herbicides are presented below.

Right-of-Way herbicide use

Rights of way treated with herbicides primarily consist of roadways managed by the Maine Department of Transportation and the Maine Turnpike Authority, electric power lines managed by the state's electric utilities, and railroads. Figure 11 summarizes the reported acres of right of way treated and the amounts of the various herbicide used for the years 1987-1989. Although these data were originally complied from commercial applicator reports filed with the Board of Pesticides Control, they probably are underestimates of total use, since compliance with reporting requirements appears not to be complete.[19]

As the state's largest electric utility, Central Maine Power Company is responsible for the majority of the power line right of way treatments in Maine. CMP has over 11,000 square miles of service territory, approximately 485,000 customers and 32,000 acres of right of way along 2,200 miles of transmission lines.[20] Prior to the 1950's, CMP managed its right of way through manual cutting of shrubs and brushes. Since then, however, the utility has become more reliant upon chemical control of right of way brush; primarily using a 3-4% mixture of Garlon applied with hand pressurized back pack spray tanks as a foliar spray on a three to four year cycle to control small trees capable of growing into the conductors. Larger trees, over 8 to 10 feet tall, are mechanically cut. The stumps of those species capable of resprouting are treated with an herbicide.

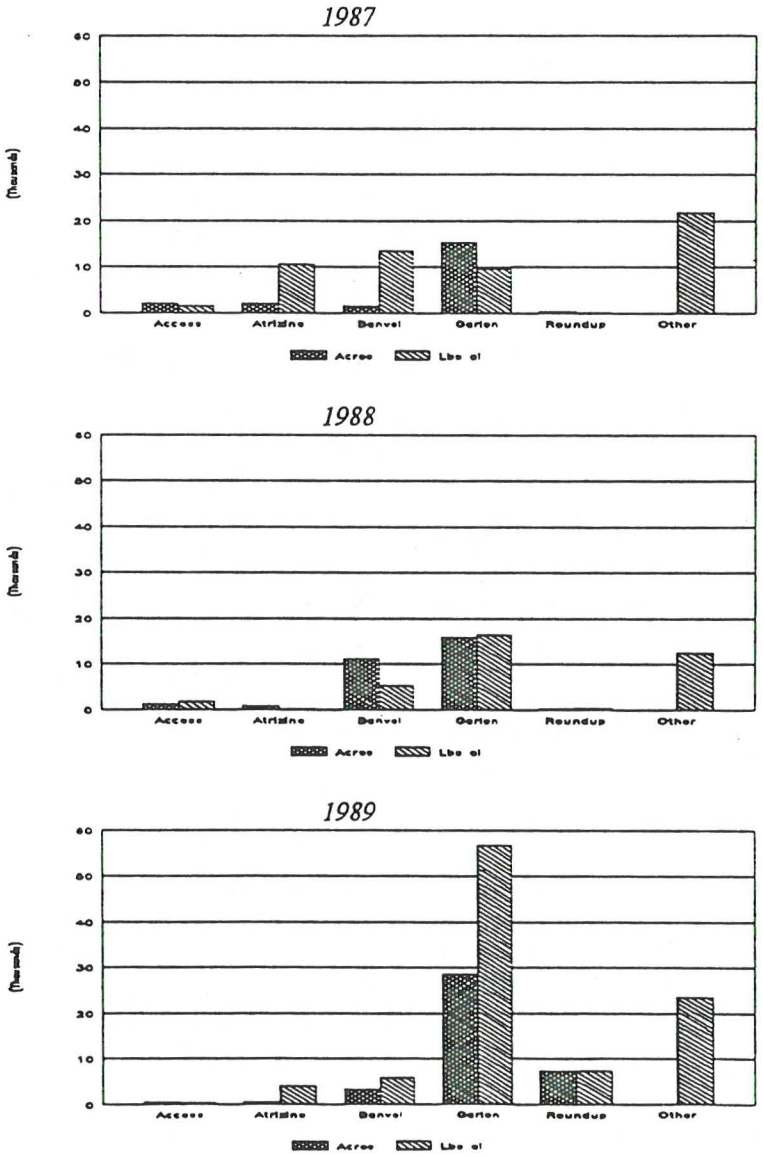
The Department of Transportation uses herbicides to manage roadside vegetation on approximately 17,000 miles of roadside per year. Currently, the MDOT primarily uses a 0.5% mixture of Garlon and Banvel applied annually by directed spraying from trucks to target trees, although some broadcast spraying occurs as well.[21] Chemicals other than Garlon and Banvel are sometimes used in selected circumstances, such as the use of Krenite along roads in more populated areas. The use of Krenite reduces the visible browning of the vegetation produced by Banvel, Garlon or Glyphosate.

FIGURE 11

Reported Right of Way Herbicide Use; 1987, 1988 and 1989

	1987		1988		1989	
Herbicide	Acres	lbs ai	Acres	Lbs ai	Acres	Lbs ai
Access	1,984	1,487	1,223	1,713	554	381
Atrizine	2,073	10,553	787	20	437	4,004
Banvel	1,500	13,492	11,073	5,280	3,238	5,830
Garlon	15,349	9,602	15,947	16,475	28,663	56,755
Roundup	317	118	236	307	7,350	7,345
Other	-	21,736	-	12,545	-	23,647
Total	21,223	56,988	29,266	36,340	40,242	97,962

Most commonly used



**From Cline (1990)*

Commercial timberland owners also participate in right of way spray treatments along access roads, although volume use appears to be relatively small.[22]

Lawn care and residential use

Although some information about commercial lawn care use of herbicides is available from commercial applicator reports filed with the Board of Pesticides Control, almost no information is available for residential use. As discussed earlier, current reporting requirements exempt general use pesticide dealers from reporting sales of the small quantity general use pesticide purchases most likely made by the individual homeowner.

Professional lawn care companies, however, are required to report herbicide use for lawn care. Figure 12 summarizes the acres treated by commercial lawn care applicators during 1987-1989 as well as summarizing the herbicides most commonly used in the lawn care sector. Although this lawn care data includes pesticide use for golf course maintenance, it does not include pesticides used in homeowner lawn care.

Although pesticide use in the Lawn Care sector appears to be smaller than the other sectors reviewed by the Commission, concerns about pesticide use in that sector arise because of apparent significant increases in the amounts used and the proximity of use in that sector to human populations. Similar concerns are reflected on the national level by the U.S. General Accounting Office (GAO) in its review of EPA progress in assessing health risks associated with lawn care pesticide use. In that report, the GAO found that the health risks of lawn care pesticides have not been fully reassessed by the EPA and that enforcement actions are not being taken on violations of pesticide safety advertising claims. Figure 13 lists the federal re-registration status of the 34 major lawn care pesticides used in the United States, and Figure 14 lists the status of the 6 lawn care pesticides which have also undergone special review by the EPA because of concerns about their chronic health and environmental effects.

C. Environmental Impacts of Herbicide Use

1. Surface and ground waters

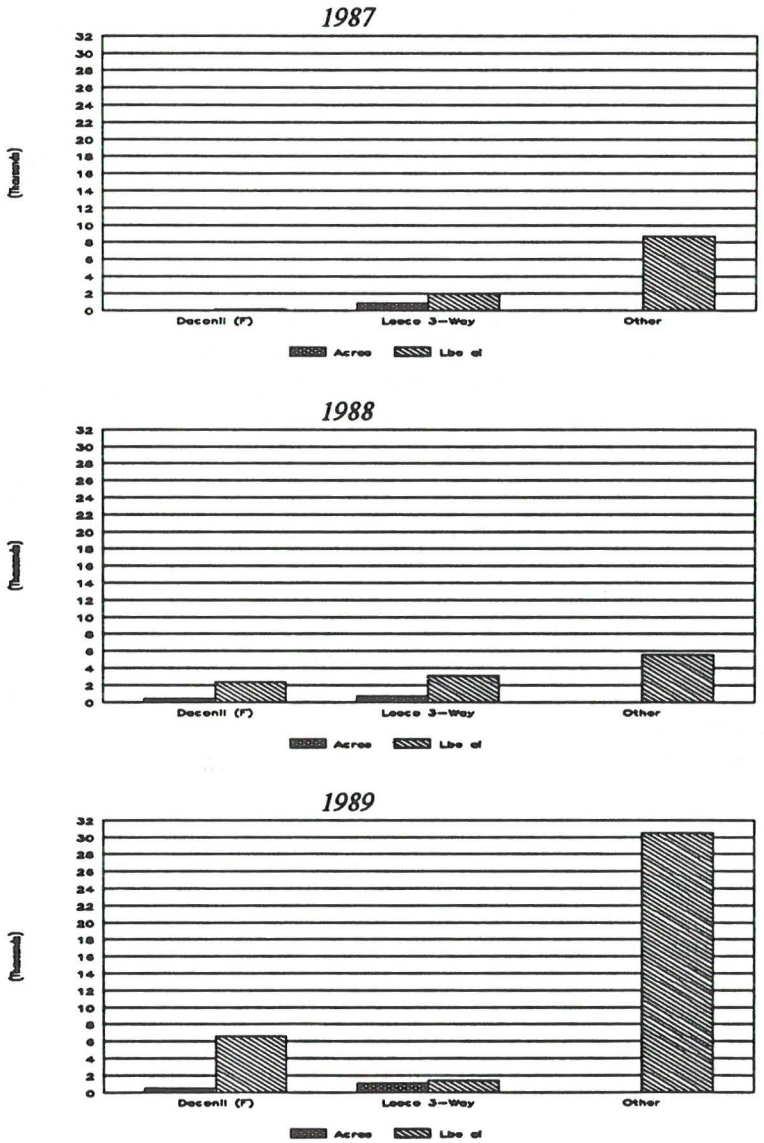
One of the greatest threats posed by the use of pesticides is the potential for the contamination of our surface and ground water resources. Ground water contamination is a particularly

FIGURE 12

Reported Lawn Care Pesticide Use; 1987, 1988 and 1989

	1987		1988		1989	
Herb/Fung	Acres	lbs ai	Acres	Lbs ai	Acres	Lbs ai
Daconil (F)	7	132	432	2,320	529	6,628
Lesco 3-Way	834	2,000	730	3,133	1,126	1,380
Other	-	8,660	-	5,584	-	30,476
Total	841	10,792	1,162	11,037	1,655	38,484

Includes pesticides used for golf course turf management, but not homeowner use.



*From Cline (1990)

FIGURE 13

EPA's List of 34 Major Lawn Care Pesticides and Their Re-Registration Status.

Pesticide	Type	Interim Registration Standard as of December 24, 1988
2,4-D (2,4-dichlorophenoxyacetic acid)	Herbicide	YES
Acephate	Insecticide	YES
Atrazine	Herbicide	YES
Balan	Herbicide	NO
Bayleton	Fungicide	NO
Bendiocarb	Insecticide	YES
Benomyl	Fungicide	YES
Betasan	Herbicide	NO
Carbaryl	Insecticide	YES
Chlorothalonil	Fungicide	YES
Chlorpyrifos	Insecticide	YES
DDVP (dichlorvos)	Insecticide	YES
DSMA (disodium methanearsonate)	Herbicide	NO
Dacthal	Herbicide	YES
Diazinon	Insecticide	YES
Dicamba	Herbicide	YES
Diphenamid	Fungicide	YES
Endothall	Herbicide	NO
Glyphosate	Herbicide	YES
Isoxaben	Herbicide	[a]
MCPA (2-methyl-4-chlorophenoxyacetic acid)	Herbicide	YES
MCPP (potassium salt)	Herbicide	YES
MSMA (monosodium methanearsonate)	Herbicide	NO
Malathion	Insecticide	YES
Maneb	Fungicide	YES
Methoxychlor	Insecticide	YES
Oftanol	Insecticide	NO
PCNB (pentachloronitrobenzene)	Fungicide	YES
Pronamide	Herbicide	YES
Siduron	Herbicide	NO
Sulfur	Fungicide	YES
Trichlorfon	Insecticide	YES
Triumph	Insecticide	[a]
Ziram	Fungicide	NO

[a]Pesticide was registered after November 1, 1984; therefore, reregistration is not required.
Source: GAO analysis of EPA data.

FIGURE 14

Status of Lawn Care Pesticides in Special Review as of December 1989.

Pesticide	Chronic health and environmental concerns	Special Review status
2,4-D	Carcinogenicity	Preliminary notification[a]
DDVP (dichlorvos)	Oncogenicity	Special Review in process[b]
Maneb (EBDC)	Oncogenicity Teratogenicity	Special Review in process[c]
Benomyl	Mutagenicity Teratogenicity Reproductive effects Wildlife hazard	Special Review completed[d]
Pronamide	Oncogenicity	Special Review completed[e]
Diazinon	Avian Hazard	Special Review completed[f]

[a]EPA's concerns have not been fully resolved. A decision whether to place 2,4-D in Special Review because of possible cancer risks will not be made until late summer 1990 upon completion and review of two epidemiological studies.

[b]EPA will reassess carcinogenic potential when additional oncogenicity data are received.

[c]EPA announced a preliminary determination to cancel most of the food crop uses of maneb.

[d]EPA requires use of cloth or commercially available disposable dust masks by mixers/loaders of benomyl intended for aerial application and requires field monitoring studies to identify residues that may enter aquatic sites after use on rice.

[e]EPA cancelled some product registrations, modified labeling, and revised the residue tolerance for application on lettuce.

[f]EPA cancelled sod farm and golf course uses. An appeals court suspended EPA's decision. EPA is reviewing its cancellation decision and the court's reasoning for its suspension of EPA's decision.

Source: GAO analysis of EPA data.

serious threat since solving a ground water contamination problem after it is found is nearly impossible. Approximately one half of Maine's population relies on ground water for their drinking water and nearly 90% of all rural residents obtain their drinking water from wells or springs. There is little doubt that the potential for contamination is real and that the concern over our water resources is high.

In 1985, the Legislature amended Maine's Ground Water Protection Act to state that ground water resources of the state "may be threatened by certain agricultural chemicals and practices, but that the nature and extent of this impact is largely unknown. Failure to evaluate this potential problem is likely to result in costly contamination of some ground water supplies leading to increased risks to the public health".[23] Since enactment of that amendment, ground water contamination has been documented in several states, including Maine. Although technological improvements in sample analysis allow us to detect smaller and smaller quantities of contaminants, and various surveys completed to date have documented ground water contamination in some areas, the full nature and extent of the ground water contamination problem remains largely unknown.

Several studies of Maine's ground water have been conducted since 1980. A 1984 EPA study of ground water found contamination from agricultural pesticides in 23 states, including positive results for aldicarb contamination of Maine ground water. Aldicarb contamination was also reported by the Rhone-Poulenc Ag Company, formerly Union Carbide, in its study of 304 well sites located adjacent to areas where aldicarb was being used.[24] More recently, the Maine Geological Survey completed a 3 year pilot study of ground water contamination in Maine and reported positive indications for pesticide contamination in 26 of the 229 wells sampled. Only one sample showed pesticide contamination levels which exceeded EPA established health standards. In that study, the Geological Survey drew several significant conclusions about ground water contamination in Maine.[25] First, the study concludes that although pesticide residues are present in ground water in Maine, detectable concentrations were low in the wells sampled. A finding of relatively low levels of ground water contamination is significant, since it suggests that programs focused on prevention of ground water contamination may yield substantial future benefits by avoiding more severe problems. Other states have more severe problems now. Iowa, for example, reported in its first comprehensive state-wide rural ground water survey that 13.6% of that state's private drinking water wells were contaminated with one or more pesticides, and that contamination in 1.2% of the wells exceeded health advisory levels. Second, the

study concluded that predictions about ground water vulnerability drawn from other states may not be valid for Maine. Studies in Wisconsin, California and Massachusetts, for example, indicate that sand and gravel aquifers are more susceptible to contamination. The Maine data indicate that bedrock wells in Maine may be more at risk. Third, the Maine study suggested that pesticides applied to potatoes may pose the greatest threat to ground water contamination. As a commodity, potatoes account for approximately 60% of all agricultural pesticide use in Maine. Although Maine is third in the nation in potato production, behind Idaho and Washington, Aroostook County is the single largest potato producing county in the nation.[26] Pesticides detected in potato areas include methamidophos, metribuzin, dinoseb, endosulfan, dicamba, chlorothalonil and picloram. The potential for ground water contamination in potato areas arise from the size of the crop raised in Maine and the amounts and variety of pesticides used in potato production. Most of the potato acreage in Maine is also located above limestone bedrock aquifers.

Figure 15 presents a summary of the findings from the 1989 ground water study conducted by the Maine Geological Survey, and Figure 16 presents the summary of the pesticides detected in that study.

In response to growing concerns about ground water contamination, the Board of Pesticides Control is developing a plan for protecting ground water from pesticide contamination. Using planning funds provided by the EPA, the Board of Pesticides Control and other agencies (including the Department of Environmental Protection, the Maine Geological Survey, the Department of Agriculture, Food and Rural Resources, and the Department of Human Services) are preparing a plan which will identify risks to ground water and will recommend ways to educate pesticide users on how to protect ground water resources. A well monitoring program is expected to be part of the overall effort, and the Board expects to use its authority to reclassify or add restrictions to pesticides identified as posing threats to ground water, particularly pesticides with unacceptably high potential for leaching into ground water systems. The Board expects the plan to receive public comment in 1991 and anticipates program implementation by 1992. The incentive for developing this program has come from the EPA, which has provided funding for states to develop plans tailored to suit local pesticide use patterns and ground water problems.

Surface waters may become contaminated either directly, by inadvertent application of pesticides to the surface of the water, or indirectly, by either the transport of the pesticide through the soils to a water body or by aerial drift of the pesticide

FIGURE 15

Summary of Pesticide Ground Water Survey.

Crop Type	Well Type: S & G	Well Type: Till	Well Type: Bedrock	Well Type: Total	No. Samples	Residues Detected: None	Residues Detected: Trace	Residues Detected: Sig.	Trace and Significant Residues Found in Survey
Blueberries	11	0	0	11	21	14	7	0	*Alachlor, hexazinone, chlorothalonil*
Orchard	0	3	3	6	10	9	0	1	*Arsenic*
Forage/Market Garden	9	0	1	10	15	13	1	1	*Atrazine (trace), Alachlor*
Potato	27	10	31	68	163	132	26	5	*(Trace) methamidophos, metribuzin, dinoseb, endosulfan, dicamba, and chlorothalonil (Sig) methimidophos, dinoseb*, picloram methimidophos and metribuzin*
Total	47	13	35	95	209	168	34	7	

*Note: *This dinoseb detection was the only finding which exceeded established health standards.*

Report Findings: *(1). Thirteen percent of all samples showed positive results for contamination.*
(2). Twenty six samples had concentrations exceeding trace amounts.
(3). Only one sample had pesticide concentrations exceeding health standards.
(4). Although pesticide residues are present in groundwater in some areas of Maine, detectable concentrations are low.
(5). Study suggests that chemicals applied to Potatoes pose greatest threat to groundwater contamination in Maine.
(6). Conclusions about groundwater vulnerability drawn form other states may not be valid for Maine. Wisconsin, California and Massachusetts indicated sand & gravel most susceptable to contamination; Maine data shows bedrock wells may be more at risk.
(7). Additional research is required. Basic data must be developed to make sound management decisions.

Source: Anderson, Walter A.: Pesticides in Ground Water; Final Report; Maine Geological Survey, Department of Conservation (1989).

FIGURE 16

Pesticides Detected in Ground Water

Pesticide	Number of Wells Sampled	Number of Wells With Detectable Pesticide Levels*	Number of Samples Analyzed	Number of Samples With Detectable Pesticide Levels*	Maximum Conc-entration Found (ug/l)
Alachlor	95	1	203	1	trace
Aldicarb	9	0	9	0	nd
Arsenic	39	1	50	1	37
Atrazine	95	1	203	1	trace
Azinphos'methyl	95	0	203	0	nd
Butylate	95	0	203	0	nd
Captan	95	0	203	0	nd
Carbaryl	95	0	203	0	nd
Carbofuran	95	0	203	0	nd
Chlorothalonil	95	1	203	1	trace
Chlorpyrifos	95	0	203	0	nd
Copper	8	0	12	0	nd
Cyanazine	95	0	203	0	nd
2,4-D	74	0	149	0	nd
2,4,5-T	74	0	149	0	nd
2,4,5-TP	74	0	149	0	nd
Diazinon	95	0	203	0	nd
Dicamba	74	2	149	2	trace
Difolitan	95	0	203	0	nd
Disulfoton	95	0	203	0	nd
Dinoseb	74	8	149	9	2.3
Endosulfan	95	2	203	2	trace
Endrin	95	0	203	0	nd
Eptam	95	0	203	0	nd
Hexazinone	95	2	203	2	trace
Imidan	95	0	203	0	nd
Lindane	95	0	203	0	nd
Linuron	95	0	203	0	nd
Malathion	95	0	203	0	nd
Methomyl	7	0	7	0	nd
Methoxychlor	95	0	203	0	nd
Methyl Parathion	95	0	203	0	nd
Metribuzin	95	4	203	6	0.49
Methamidophos	46	10	72	10	10.5
PCNB	95	0	203	0	nd
Picloram	74	1	149	1	1.4
Simazine	95	0	203	0	nd
Triclopyr	74	0	149	0	nd
Trifluralin	95	0	203	0	nd

* Includes all wells/samples where pesticides were determined to be present, even if the concentrations were below statistically sound levels of detection.

nd = not detected

from the intended target site. Pesticide applications directly to the surface waters of the State are prohibited by Title 38 §171, unless a waste discharge permit is first obtained from the Department of Environmental Protection.[27] Pesticide drift from target areas onto off-target areas of environmental sensitivity, including water bodies such as streams, ponds, lakes and coastal and freshwater wetlands, are regulated by rules adopted by the Board of Pesticides Control. The potential for surface water contamination from the movement of pesticides through the soils, however, has not been extensively studied and is poorly understood.

3. Habitat Impacts

The Commission recognizes that there are many information sources regarding environmental impacts of herbicide applications. It was beyond the scope of the Commission to undertake a comprehensive review of environmental impacts of herbicides. For a more extensive consideration of these impacts, the reader is referred to available industry reports; The Herbicide Handbook, published by the Weed Science Society of America; Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals; 66 Species of Freshwater Animals published by the U.S. Fish and Wildlife Service and; The Use and Potential Impacts of Forestry Herbicides in Maine, a report submitted to the Maine Department of Conservation.

Literature available to the Commission for review regarding habitat impacts of herbicide use span the broad categories of mammalian vertebrate, birds and aquatic vertebrate and invertebrate impacts. Generally, the preponderance of the research relates to glyphosate impacts on small mammals and aquatic invertebrates. Although not absent from the literature, less research appears on impacts on large mammals, such as browsing habitat impacts on deer and moose, and aquatic vertebrates. All of the research reviewed is both species and chemical specific, and generally assesses acute exposures risks and short term habitat impacts. The absence of chronic and long term impact studies may be attributable to the complexity of such studies, the length of time necessary for such analysis and the cost.

With respect to mammalian vertebrates, studies done in Maine show that the abundance of small mammals, such as shrews and voles, are often significantly reduced over the study period in treated clearcuts relative to untreated clearcuts. The reduction in numbers of these species is related to migration away from the site due to reductions in ground cover and food. Other species of small mammal, such as deer mice, tend to show little

response. Areas missed by herbicide treatments ("vegetative skips") maintained the vegetative diversity necessary to support such species and typically showed a maintenance, or even an increase in, small mammal diversity.

Forestry applications of herbicides occur in late summer or early fall and effect the availability of browse. Potential impacts on browse availability prior to winter has raised some concern about deer survival, particularly in large treatment areas. Although much of the research on deer and moose browse impacts comes from the Northwest, studies in Maine indicate that glyphosate treatments appear not to negatively effect deer, and suggest that optimization of browse production may occur when adjacent block treatments are staggered over time. Studies of browse availability by the Cooperative Forestry Research Unit conclude that all potential browse species were more abundant on chemically released clearcut sites than on clearcut sites which received no herbicide treatment. Studies in other states also suggest that chemical release increases the total availability of browse for at least some period of time, usually 2-7 years, after treatment. Presently, the Cooperative Forestry Research Unit (CFRU) is planning to undertake a long term study of glyphosate related deer and moose habitat impacts in Maine.

Concerns about research on browse availability conducted to date relate to the lack of research comparing clearcut and chemically released sites to areas under other management practices, such as shelterwood harvesting. The bulk of the research available for review by the Commission focused on comparing browse availability between treated and untreated clearcut sites.

Habitat impacts on birds has not been extensively studied in Maine. In general, birds are more responsive to habitat changes than small mammals, and the reviews indicate that some populations of birds tend to decline in treated areas, particularly insectivorous species, due to the decline in food sources.

There are relatively few published studies on the impacts of herbicides in the aquatic environment (Balogh et al. 1990; Tooby 1985). The focus of most of the studies available is the acute toxicity of herbicides to aquatic organisms. Published research on the potential effects at the population or community level is minimal (Hildebrand et al. 1982). In addition, most of the information available is concerned with the herbicide, glyphosate. As with studies of mammalian habitat impacts, literature pertaining to the potential aquatic impacts and fate of other commonly used herbicides in Maine, such as triclopyr and picloram, is limited (Servizi et al. 1987).

Because glyphosate is adsorbed to soil particles and does not appear to leach into waterways, studies indicate that entry into aquatic environments is unlikely or insignificant (Bronstad and Friestad 1985; Roy et al. 1989; Feng et al. 1990). Glyphosate residues degrade fairly rapidly in soil, although the process is dependent on the microbiological activity of the soil. In warm, moist soils low in pH and high in organic matter, degradation is most rapid (see Tooby 1985, references therein). Maine's forest soils, although moist and high in organic matter, are typically cool and shallow.

If glyphosate is used as an aquatic herbicide, or if overspraying of aquatic environments occur, residues do enter water. If glyphosate enters the aquatic environment through erosion or runoff attached to soil particles, it will probably degrade at the rate dictated by the microbiological activity of that environment (see Tooby 1985, references therein). If glyphosate enters the aquatic environment directly, it would be adsorbed by the benthic sediments and would breakdown according to the microbiological activity of that environment (Bronstad and Friestad 1985). Studies indicate that the low magnitude and transient nature of glyphosate in aquatic environments results in no significant impact to aquatic organisms (Feng et al. 1990; Thompson et al. in press). Efforts to mitigate against inadvertent introduction of herbicides into the aquatic environment and to protect potable water supplies, fisheries, riparian areas, and other critical wildlife habitat, typically include the establishment of pesticide free zones and site specific and flexible buffer zones around such areas (Reynolds 1989).[28]

Reviews of toxicity tests for herbicides indicate that glyphosate, triclopyr, and picloram are relatively nontoxic and unlikely to significantly affect aquatic organisms at recommended rates of application (see Balogh et al. 1990, references therein). However, some formulations of these herbicides may be more toxic to aquatic organisms than to non-aquatic organisms. The technical chemical herbicides may differ from commercial formulations in their impacts to aquatic organisms (Balogh et al. 1990). Formulations of herbicides with active ingredients and chemical agents such as surfactants may have increased toxicity in the aquatic environment. For example, "Roundup" (glyphosate formulated with a surfactant) is more toxic to aquatic invertebrates than its parent compound (Folmar et al. 1979) . The triclopyr formulation, butoxyethyl ester, is more toxic to salmon, Daphnia, and trout than its parent compound (Balogh et al. 1990). The reviews do point out that these effects are only seen at concentration levels higher than what would be found in the aquatic environment after application at recommended levels.

The toxicity of Roundup to aquatic species is dependent on water temperature and pH (Servizi et al. 1987). Toxicity of Roundup to fish increases as water temperature and pH increase (Folmar et al. 1979). Acute toxicity studies (96-hour) have been reported for rainbow trout, coho salmon, sockeye salmon, channel catfish, bluegill, fathead minnows, and several species of aquatic invertebrates including, daphnids, scuds, and insect larvae (Folmar et al. 1979). Sublethal toxicity tests (10-day) have been reported for coho salmon (Hildebrand et al. 1982; Mitchell et al. 1987; Servizi et al. 1987). Certain fish life-stages may also be more sensitive than others. Young-of-the-year fish may be more sensitive to Roundup, especially at times of higher water temperatures and decreased oxygen levels (Mitchell et al. 1987). Because of this, field applications of glyphosate are not recommended during warm summer months of low water levels and increased temperatures (Folmar et al. 1979).

The results of these published studies indicate that glyphosate, when applied at recommended levels, is unlikely to adversely impact aquatic organisms (Folmar et al. 1979; Hildebrand et al. 1982). Folmar et al. (1979) suggested that glyphosate applications may be harmful to aquatic organisms if water temperatures are elevated, pH exceeds 7.5, or if it is reapplied within seven days. There has been limited published research on the bioaccumulation of glyphosate in aquatic organisms (Tooby 1985). Tooby (1985), in a review of glyphosate, reports that despite minimal published research glyphosate is considered to have low potential for bioaccumulation because of rapid degradation in aquatic environments.

4. Herbicides and public health

Health risks which may result from exposure to a given pesticide are estimated by a process known as "risk assessment". In this process, the toxicology data base for a particular pesticide is established and a toxicity factor determined. The health risk for given exposure conditions is determined by multiplying the toxicity factor by the appropriate exposure factor.

Uncertainties in evaluating the toxicity of pesticides and the potential for exposure make risk assessment an inexact science. Exposure conditions can vary from the conditions assumed in any risk assessment analysis and extrapolations of toxicity from laboratory animals to humans is problematic. The principle means used to assess the public health risks presented by exposure to various pesticides are the "good laboratory practices" established by the Environmental Protection Agency. Although it was beyond the scope of this Commission to comprehensively

review the toxicological studies and risk assessments which have been conducted, it was clear that those assessments, and the entire risk assessment process, is facing substantial criticism from many sectors. The EPA has been criticized for being too slow in its pesticide review process, and the process has been criticized by many who feel that it is too dependent on industry funding and industry supplied data. Because of the substantial costs and the time involved in completing comprehensive assessments of human health risks posed by pesticides, states have not had the resources necessary to implement their own programs. Most states are forced to rely almost exclusively on the results of EPA assessments when making state pesticide registration decisions. Several states, including Maine, have moved towards improving their ability to review the EPA risk assessments and perform exposure assessments more reflective of local conditions by employing pesticide toxicologists.

Uncertainty about the safety of pesticides exists in part because the EPA does not have data which meets the most current scientific standards for most of the active ingredients being used. Although the "re-registration" process authorized by amendments to FIFRA in 1988 require that the EPA complete reassessments of hundreds of active ingredients within a specific time period, early reviews of their progress have been critical. Until the EPA completes its reassessments using the most current scientific review standards, the actual risks posed by the continued use of previously registered chemicals cannot be fully known.

Determining pesticide risks

As noted earlier, the Environmental Protection Agency is the principle federal agency responsible for assessing pesticide risks. All pesticides which are sold, distributed or used in the United States must first be registered by the EPA. Registration of a pesticide by the EPA is intended to ensure that the pesticide will perform its intended function without causing unreasonable adverse effects on the environment. To make that determination, the EPA requires pesticide producers to supply health and environmental impact data for each active ingredient, including data on toxicity to mammalian organs, developmental and reproductive effects, and carcinogenic effects following acute and chronic exposures. Data is also provided on potential skin and eye irritation, hazards to non-target organisms, potential for acute poisoning, tumor formations, birth defects, reproductive effects, environmental interactions and the quantity and nature of residues likely to occur in food or feed crops. To produce this data, each pesticide active ingredient must undergo acute and chronic toxicity tests and assessments of the probability

and extent of exposure to the pesticide by non-target organisms using the "good laboratory practices" standards established by the EPA. Toxicity testing results in a series of dose response curves for each of the toxic effects of the chemical. For each effect, other than tumor formation, there is a threshold below which the effect is not observed. That threshold is the "No Observable Effects Level" (NOEL) for the substance. The lowest NOEL, when adjusted by a safety factor to account for biological differences between test animals and humans and variations within populations, results in a reference dose, or "Acceptable Daily Intake", for humans. Exposure assessments require analysis of the pesticides environmental fate, potential for off-target drift, persistence, chemical changes in the environment, movement in the soil and an estimation of the frequency and magnitude of exposure.

From these toxicity and exposure assessments, the EPA determines the environmental and public health risks associated with each particular active ingredient. Depending upon the results of the pesticide risk assessment, the EPA may register the chemical as either a general-use, limited-use or restricted use pesticide (sometimes with specific label restrictions) or may decline to register the chemical.

Risk assessments in Maine

Maine has taken steps to augment the EPA registration process by reviewing the environmental and public health risks of pesticides, beginning with the most commonly used fungicides and herbicides. In the early and mid-1980's, the Board's Medical Advisory Committee (MAC) instituted a pesticide review process which classified pesticide risks based primarily upon a literature review. Pesticides with relatively little research were classified as having the highest risk potential, and recommendations were made to the Board that those active ingredients be looked at more closely. In 1987, the Board reported that such risk reviews had been undertaken on 20 pesticide active ingredients, 9 of which were reported as complete.

More recently, however, the Board and the MAC have begun developing a more thorough risk assessment process and have made the decision not to continue the use of the earlier procedures. Risk assessment procedures are now being used which review the risks of pesticides using a hazard assessment (review of the chemicals toxicity) and an assessment of exposure potential based on Maine exposure conditions. Results of hazard and (Maine-specific) exposure assessments, when taken together, are intended to provide a more comprehensive and accurate assessment of risk to the people of Maine.

The status of public health and environmental hazard and exposure assessments undertaken by the Board of Pesticides Control since 1987 are listed below.[29] Where particular assessments have been completed, the date of completion is indicated in the table.

Pesticide Hazard and Exposure Assessments undertaken by the BPC since 1987.

Active Ingredient	Hazard Assessment	Exposure Assessment
•*Herbicide Environmental Assessments*		
Glyphosate	on-going	(1)
Triclopyr	on-going	(1)
•*Fungicide Health Assessments*		
Metalaxyl	done (3/90)	(2)
Chlorothalonil	on-going	not started
Anilazine	on-going	(1)
Ethylene thiourea	done (11/88)	done (11/88)

(1) Need depends on results of hazard assessment.
(2) The board has determined that an exposure assessment is unnecessary at this time.

D. Alternatives to Herbicide Use

Testimony received by the Commission on alternatives to herbicide use included some discussion of partial cutting practices for forest management, "Integrated Pest Management" (IPM) and "Best Management Practices" (BMP) in agriculture, and physical or mechanical, rather than chemical, brush control along rights-of-way. An exhaustive review of alternatives was not undertaken by the Commission, nor was an in-depth analysis of the economics of alternatives possible. It was clear to the Commission, however, that techniques which minimized or eliminated the use of herbicides, or pesticides in general, were being incorporated into forestry, agricultural and right-of-way management practices when those techniques had been proven more effective than chemical methods at either lowering production costs, increasing yields, or both. The substantial and continuing growth in the use of, and dependency on, chemically synthesized fungicides, insecticides and herbicides in these sectors over the past 45 years occurred because of the immediate economic benefits derived from their use. Testimony received by the

Commission from pesticide users suggest that the economic benefits *(increased yields, lower production costs, greater competitiveness)* and social benefits *(lower priced goods, greater selection, higher quality products, and jobs)* of continued pesticide use remain substantial. Opponents of pesticide use, however, suggest that such analyses of benefits are short-sighted because they do not include the potential long-term "external" costs from public health risks, habitat degradation or ground water contamination. A more comprehensive accounting of the costs and risks of pesticide use, opponents argue, would change the balance of the social cost-benefit calculation towards policies directed at decreasing pesticide use.

Agriculture

Testimony received by the Commission regarding alternative agricultural practices ranged beyond herbicide use and included options for minimizing or reducing pesticide use in general. These options included Integrated Pest Management (IPM) systems, which primarily focus upon more efficient use of insecticides and fungicides, Best Management Practices (BMP) which include methods for reducing or preventing off-site contamination of surface and ground waters from chemicals used, erosion and manure, and organic agricultural practices which focus on the elimination of synthetic agricultural chemical use.

IPM is an agricultural management program which relies heavily on monitoring potential pest problems and, through a combination of forecasting techniques, management decisions and biological controls, controlling pests at a level which does not cause economic damage to the crop. The goal of the Maine IPM program, as operated by the Cooperative Extension Service, is to reduce pesticide use to the level necessary to produce high quality products and at the same time protecting human health and environmental quality.[30] Demonstrations of IPM practices for potato, apple, blueberry, sweet corn and broccoli crops in all of sixteen Maine counties have achieved documented reductions in pesticide use. Disease forecasting technologies and field monitoring techniques developed for potato farms have resulted in substantial reductions in fungicide and insecticide use on test farms.[31] In the first year of the apple IPM program, insecticide and miticide sprays were reduced by 34%, and blueberry maggot fly monitoring achieved almost 70% reductions in insecticide use on test blueberry farms through improved timing of applications. An IPM test program undertaken by the Washington County Soil and Water Conservation District, which included the monitoring of the blueberry fruit fly, eliminated the need for insecticide spraying on 50% of the blueberry acres under study.[32]

Best Management Practices (BMP) and Low Input Sustainable Agriculture (LISA) are two other crop management programs which, in part, focus on minimizing pesticide use. BMP programs are typically broader in their scope than IPM programs in that

BMP programs also provide conservation alternatives in such areas as manure management, fertilizer and pesticide use and sediment control. LISA emphasizes self-sufficiency in agricultural inputs, including reductions in farm chemical and petroleum use, increasing the energy efficiency of the farm operations and the use of non-chemical and natural pest and disease management systems.

Organic agriculture, agriculture without any synthetic chemicals, has increased significantly in Maine in recent years. Although still a small fraction of the total agricultural sales in the state, sales from organic farms is estimated at approximately $2 million in 1989.[33] Between 1987 and 1990, the number of certified organic farms increased by over 300%; from 21 to approximately 90. During the same time period, total acreage under organic production increased by more than 150%; from 185 in 1987 to more than 500 in 1990. This trend of increasing market share for organic products is reflective of national trends. Nationally, retail sales of organic food in 1989 is reported at $1.25 billion, up 40% from 1988 and more than 600% since 1980.[34] Recent surveys in New Jersey and California suggest that increases in organic sales may be attributable to public perceptions that organic products present lower health risks, have higher nutritive values and that organic agricultural production is better for the environment.[35] A national survey has found that 84% of Americans prefer organically grown fruits and vegetables, and that 44% said they would pay more for organic produce.[36]

Forestry

Alternative forestry practices which reduce or eliminate the need for herbicide treatments reviewed by the Commission included shelterwood and selection harvesting systems. These "partial cutting" methods do not rely on clearcutting and therefor substantially reduce the need for chemical release of regenerating seedlings characteristic of clearcut practices. Proponents of partial cutting systems also suggest that these alternatives may reduce long-term needs for insecticide applications since they maintain a forest habitat more likely to support avian predators of the spruce budworm. Although very little research was available to the Commission which directly compared productivity and yields of clearcutting and partial cutting practices, or their applicability to industrial forest management practices, neither alternative management practice is new or untried in Maine. Of the total 326,000 acres of forests harvested in Maine in 1989, nearly 15% was harvested using shelterwood systems and 19% using selection harvesting systems. In fact, partial cut forest management systems, which include shelterwood and selection systems as well as single species, diameter limit cuts and seed tree cuts, accounted for a majority (55%) of the total acres harvested in 1989. Forest herbicide use is limited primarily to the 45% of the forest acres harvested using clearcutting methods.

Both clearcutting and shelterwood systems are even-aged management systems, meaning that both result in the establishment of a forest with trees of relatively the same age. Selection harvesting, however, is an uneven-age silvicultural system. Selection systems rely on the harvesting of single trees or small groups of trees by diameter group cuts. Research on spruce-fir stands in Maine which compare selection harvesting systems, a commercial clearcut and a woodland preserve concludes that, except for the most degenerate forest stands, selection system silviculture can be put into practice in most spruce-fir types.

Right of Way and Lawn Care

Alternatives to right-of-way pesticide use reviewed by the Commission primarily dealt with human or mechanical brush removal. The Maine Department of Transportation and Central Maine Power Company both testified to the Commission that each had some areas of right-of-way that were currently managed without pesticides. Discussion of the efficacy of such alternatives focused mostly on economics, although several of the Commission members desired to see future discussions of alternatives expanded to include an analysis of the environmental and public health risks associated with right of way pesticide use.

The Maine Department of Transportation testified that its current right of way spray program costs about $35.00 per mile. Although the MDOT has undertaken some pilot projects designed to test alternatives to right of way pesticide use, no analysis of the relative costs and benefits of those projects was presented to the Commission. Those municipalities which have entered into no-spray agreements with the MDOT are using a combination of methods to maintain roadside brush control, ranging from hand cutting of brush to mechanical removal. From working with those municipalities, the MDOT estimates that mowing or bush-hogging to control roadside brush is roughly twice as expensive as pesticide use. At least one community maintains part of its municipal road side free from brush using volunteers, who annually hand-cut vegetation under the intermittent supervision of MDOT staff. The MDOT has also experimented, several years ago, with substitution planting along rights of way. Although recent inspection of these sites suggested positive results, the department has not formally assessed the effectiveness of those experiments.

As has been noted earlier in this report, most brush control along utility rights of way is accomplished through the use of herbicides. Alternatives to transmission line brush control are much the same as road side brush control; either hand cutting of brush, mechanical

removal or substitution planting. Central Maine Power has testified to the Commission that, based on experience in Lebanon, Maine, mechanical control of brush appears to be 400%-500% more expensive than herbicide use. Central Maine Power Company estimated that its cost for herbicide treatments along transmission line rights of way is roughly $120 per acre, on a four year cycle. Mechanical control in Lebanon is estimated to be ranging from $225-$275 per acre on a two year rotation. In a seven year study of mechanical v. herbicide brush control along utility transmission lines, Delmarva Power (an electric utility serving parts of Delaware, Maryland and Virginia) reported herbicide treatment costs of $90 per acre and mechanical control costs of $119 per acre in the seventh year of the study.* Although the average of Delmarva's actual costs over the seven year study period were $162 per acre for herbicide control and $143 per acre for mechanical control, that utility anticipates that, over time, herbicide use along its transmission line rights of way will result in substantial savings.[37] Central Maine Power's right of way herbicide use is now relatively constant because the species capable of sprouting have been controlled by the regular use of herbicides. The Company believes that discontinuing its long term program of selective herbicide use would increase resprouting and significantly increase right of way maintenance costs in areas not treated by herbicides.

Although the Commission received no direct testimony on alternatives to lawn care herbicide use, several reports and articles reviewed by the members included some discussion on lawn care alternatives. Most often, these reports recommend education as a tool for minimizing the amounts of pesticides used for lawn care, and methods such as low input lawn care and careful landscaping as alternatives to lawn care pesticide use. The Board of Pesticides Control recently reported that a Maine commercial lawn care applicator was able to reduce Trimec applications by 77% and Dursban applications by 94% using a targeted lawn care treatment program rather than a preprogrammed broadcast spray program.

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*It should be noted that differences in the terrain conditions between Maine and the Maryland, Delaware and coastal Virginia area may limit the Delmarva study's applicability to Maine utilities. In addition, several events that occurred during the study that affected program expenditures (most notably a substantial cut in Delmarva's ROW maintenance budget in 1981 and the implementation of different ROW maintenance contracting procedures in 1986) were not controlled for by the author.

End notes:

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[1]21 U.S.C. §307 et seq.

[2]7 U.S.C. §136 et seq.

[3]7 U.S.C. §136 et seq.

[4]Congressional Quarterly Almanac, Vol. XLIV, 1988:136.

[5]7 MRSA §601 et seq.

[6]22 MRSA §1471-A et seq.

[7]7 MRSA §607, sub-§6. This section was enacted in 1988, and represented a $10/year increase over the previous annual fee of $75.

[8]1988-1989 Official Publication. Association of American Pesticide Control Official Incorporated: 162-163. Iowa, at $250, has the highest annual registration fee. Alaska, Wisconsin and the Virgin Islands all have no registration fee.

[9]Iowa's Ground water Protection Act (Code of Iowa 1989 455E.1 et seq.) imposes various manufacturer and user targeted fee and tax provisions which annually raise between $11 and $13 million for pesticide related research and demonstration projects (Cline, 1990). At least $7.5 million dollars is dedicated for an Integrated Farm Management Program designed to develop the "best appropriate technology for chemical use efficiency and reduction" (Iowa Code 1989 455E.11 (7).). California has imposed a tax on pesticide manufacturers of eight mills per dollar of pesticide sales which raises approximately $7 million annually in revenues for pesticide research and regulation. Maine has no similar provisions, however, the Commission has heard suggestions that a "sliding" registration fee based upon the volume of pesticide sales in Maine may be an option.

[10]P.L. 1987 c.702.

[11]These include the towns of Solon(1987), Brownfield(1964), Castine(1966), Pleasant Ridge Plantation(1975), Casco(1982), Freeport(1986?), Sweden(?), and Skowhegan(?).

[12]22 MRSA §1471-U, sub-§5.

[13]Although the Board has made efforts to notify municipalities of these statutory requirements, including notification through the Maine Municipal Association, they have found that messages are frequently lost or forgotten, and that turnover of officials at the local level makes this reporting requirement difficult to implement.

[14]Conversations with Max McCormack (Cooperative Forestry Research Unit) and testimony of Peter Ludwig, Forestry Manager for Champion International and Chair of the Paper Industry Information Office's pesticide subcommittee.

[15]The trend is constant except for 1986, the year of the Boise strike and GNP company curtailment.
[16]Chapter 22, section 1.(D)(I); Rules of the Board of Pesticides Control.

[17]In 1987, 839 potato farms on 83,261 acres produced over 2 billion pounds of potatoes. Eighty percent of the farms and 90% of the potato acreage is in Aroostook county. (1987 Ag. Census).

[18]862 dairy farms on 313,000 acres; 386 apple farms on 7,300 acres; 543 blueberry farms on 23,612 acres. (1987 Ag. Census).

[19]Cline (1990) points out that although 16,815 acres of ROW herbicide treatment was reported to the Board in 1988, CMP and the MDOT alone treated a total of 20,000 acres that year. Substantial swings in the reported amounts of active ingredient used (57,000 in 1986; 36,000 in 1987 and 97,000 in 1989) also suggest a reporting problem.

[20]Testimony of Everett Brann, Central Maine Power Company.

[21]Testimony of the Department of Transportation.

[22]Boise Cascade, for example, has reported its use of herbicides for roadside brush control to the Commission. Since 1985, Boise reports a total of 795 gallons of herbicide (20 gal 24D; 3 gal Accord; 662 gal Banvel 720; and 110 gal Arsenal) used for roadside control on an average of 123 miles of roadside. Treatment occurred primarily on a two year cycle. (Communications from Steve Pottle, Forester; Boise Cascade. 10/3/90).

[23]38 MRSA §401 (as amended by PL 1985, c.465, §1).

[24]Anderson (in Pesticides in Ground Water, Maine Geological Survey: 1989) reported Rhone-Poulenc's finding of 47% of the sample sites showed detectable levels in at least one sample.

[25]The MGS is careful to point out in its report that the ground water study was a pilot study which should be validated by larger studies in the future. The number of wells sampled (229) in the three year pilot was considered too small to allow for broad conclusions about the overall condition of Maine's aquifers.

[26]The most recent data on comparative agricultural production comes from the 1982 Census of Agriculture, Ranking of States and Counties. Maine potato production of 25 million hundredweight (cwt) puts it third behind Washington (46 million cwt) and Idaho (90 million cwt). Aroostook county leads all other counties in the nation, producing 23 million cwt (92% of all Maine potatoes) in 1982. Bingham, Idaho, was the second largest potato producing county at 16 million cwt.

[27]33 MRSA §171-E.

[28]According to testimony received by the Commission, buffer zones around sensitive areas are observed by some of the large industrial timberland management companies, the MDOT and CMP. For streams, the testimony was that DOT observes a 50 foot buffer, and Georgia Pacific a 75 foot buffer. For great ponds and the West branch of the Penobscot River, Georgia Pacific observes a 250 foot buffer. Monsanto, in written testimony, states that its policy for its "Spectrum" program is 100 foot buffers for leased dwellings, minor streams and rivers and public roads, and 250 feet for major streams and rivers, great ponds, private dwellings and recreational areas.

[29]As reported by the Board. Environmental risk assessments are being conducted for the herbicides glyphosate and triclopyr. Public health risk assessments are being performed on the active ingredients which are fungicides.

[30]See "Highlights of the Maine Integrated Pest Management Program". CES.

[31]Jim Dill of the Cooperative Extension Service presented testimony to the Commission indicating that disease forecasting technology allowed test potato farms to use approximately 39 tons less fungicide formulations in 1987, and the elimination of four insecticide spray operations between 1981 and 1985 through the early detection of low aphid populations. The CES estimates that these measures could have reduced overall pesticide use in the potato industry by approximately 193 tons of fungicide and 77,000 gallons of insecticide during those years.

[32]See (Duncan 1990).

[33]Memo from Russel Libby, DAFRR. At $2 million per year, organic agriculture sales are less than 1% of total state agricultural sales of approximately $400 million (1987 Ag. Census).

[34]The U.S. Organic Farming and Produce Market Marketdata, Valley Stream, NY (1989).

[35]Marketing Organic Produce in New Jersey. Rutgers University (1989). This survey found that 76% of the respondents indicated "lower health risks" as their most important reason for buying organic; 61% identified "better for the environment". Another survey (Marketing Organic Foods in California, University of California at Davis, 1989) reported organic purchase decisions based on food safety (60%), health benefits (57%) and nutrition value (56%).

[36]Organic Index, Louis Harris (1990).

[37]Personal communication with Richard Johnstone, Delmarva Power.(November 20, 1990).

Bibliography

Anderson, W.A. Pesticides in Ground Water: Final Report. Maine Geological Survey, Department of Conservation (1989).

Balogh, J.C., G.A. Gordon, S.R. Murphy, and R.M. Tietge. 1990. The Use and Potential Impacts of Forestry Herbicides in Maine. Report to Department of Conservation's Forest for the Future Program. 237p.

Batteese, Robert Jr. Board of Pesticides Control, Maine Department of Agriculture, Food & Rural Resources. Report to the Joint Standing Committee on Audit and Program Review. (March 1990).

Bley, Jerry A. Forest Clearcutting in Maine: An Assessment of Environmental Impacts and Public Policy Needs. Natural Resources Council of Maine (March 1988).

Boyle, Kevin J. et al., Economic Values for and Uses of Maine's Inland Fish and Wildlife Resources. University of Maine (1988).

Bronstad, J.O. and H.O. Friestad. 1985. Behavior of Glyphosate in the Aquatic Environment. in The Herbicide Glyphosate, E. Grossbard and D. Atkinson, eds., Butterworths.

Citizen's Forestry Advisory Council. Annual Report for 1988 for the Forest for the Future Program. Maine Department of Conservation (Jan 1989).

Cline, M.L., T. Zorach, N.R. Papoulias, and J.J. Jones. Pesticide Reduction: A Blueprint for Action. Maine Audubon Society. (1990) 76 p.

Council for Agricultural Services and Technology. Agriculture and Ground Water Quality. Report No. 103. Ames, IA (May 1985).

Council of State Governments. State and Federal Forest Pesticide Laws. Center for Environmental and Natural Resources, Lexington KY (1987).

Council of State Governments. Forest Pesticides: Descriptions and Risks. Center for Environmental and Natural Resources, Lexington KY (1987).

Council of State Governments. Use of Pesticides in Forestry: A Primer for State Officials. Center for Environmental and Natural Resources, Lexington KY (1987).

Dow Chemical Company. Environmental Fate Summary: Triclopyr (September 1988).

__. Triclopyr Technical Information Guide (Undated).

Duncan, G. Integrated Crop Management Program for Lowbush Blueberry Growers. Washington County Soil and Water Conservation District (1990).

E.C. Jordan Co. 1988. Environmental Evaluation Procedure for Pesticides. Report to Maine Board of Pesticides Control. 26p.

Ellerton, A. 1986. Forestry: An Old Option for a New Future. European News Agency. Brussels Belgium.

Field, D.B. and R.B. Forster. 1990. Opportunities for Exporting Softwood Lumber from Maine to the European Community. Maine Agric. Exp. Sta. Misc. Rept. 349. 90p.

Feng, J.C., D.G. Thompson, and P.E. Reynolds. 1990. Fate of Glyphosate in a Canadian Forest Watershed. 1. Aquatic Residues and Off-Target Deposit Assessment. J. Agric. Food Chem. 38(4): 1110-1118.

Feng, J.C. and D.G. Thompson. 1990. Fate of Glyphosate in a Canadian Forest Watershed. 2. Persistence in Foliage and Soils. J. Agric. Food Chem. 38(4): 1118-1125.

Folmar, L.C., H.O. Sanders, and A.M. Julin. 1979. Toxicity of the Herbicide Glyphosate and Several of its Formulations in Fish and Aquatic Invertebrates. Arch. Environm. Toxicol. 8: 269-278.

Forest Lands Taxation Commission. Report of the Forest Lands Taxation Commission. Report to the Second Regular Session of the 113th Maine Legislature. (Jan 1988).

Frank, R. Shelterwood-An Ideal Silvicultural Strategy for Regenerating Spruce-Fir Stands. Proc. Integrated Pest Management Symposium for Northern Forests (March 1990).

__ and F. Blum. The Selection System of Silviculture in Spruce-Fir Stands - Procedures, Early Results, and Comparisons with Unmanaged Stands. U.S. Forest Service (1978).

Graham Jr., F. 1989. Taming the Wild Blueberry. Audubon (July 1989).

Grier, N.. A Gift from the Northwest: The Far-Reaching Implications of Recent Spray Rulings. NCAP News (Spring 1984).

__. 1985. At Issue, Herbicides in Forestry. American Forests 10.

__. 1988. Why Pesticide Spraying Means Drift. J. Pesticide Reform.7(4): 6-9.

Hildebrand, L.D., D.S. Sullivan, and T.P. Sullivan. 1982. Experimental Studies of Rainbow Trout Populations Exposed to Field Applications of Roundup Herbicide. Arch. Environm. Contam. Toxicol. 11: 93-98.

Insect & Disease Management Div. Forest Health Research and Monitoring Activity in Maine 1989-1990. Maine Forest Service. Tech. Report No. 29. (1990) 30p.

The Irland Group. 1988. Clearcutting as a Management Practice in Maine Forests. Report to the Maine Department of Conservation Forests for the Future Program.

Johnstone, R.A. 1990. Vegetation Management: Mowing to Spraying. J. Arboriculture 16(7): 186-189.

Jones, M.L., L.P. Rattie, C.H.R. Wedeles and L.A. Greig. 1988. Environmental Effects of Pesticide Use for Timber Management in Ontario. Report to Ontario Ministry of Natural Resources. 143p.

Krishka, Cindy S. Report on the Effectiveness of Cleaning and Effects of Tending on the Forest Estate. Statement of Evidence submitted to the Ontario Environmental Assesment Board on behalf of the Ontario ministry of Natural Resources. (Dec 1988).

LaBonta, R.R. 1988. Forest For the Future: A Report on Maine's Forest to the Legislature, the Governor, and the People of Maine. Maine Department of Conservation .

Lautenschlager, R.A. 1985. Doghair and Herbicides; American Forests 10: 45-61.

MacLean, D.A. and M.G. Morgan.1983. Long-term Growth and Yield Response of Young Fir to Manual and Chemical Release from Shrub Competition. Forestry Chronicle. 59: 177-183.

Maine Audubon Society. Shaping Our Forests Future. Habitat (July 1988).

Maine Board of Pesticides Control. Communicator (October 6, 1990).

Maine Department of Conservation. 1989 Report on Precommercial Silvicultural Activities and Harvesting.

Maine Legislature. The Need for Uniformity in Pesticide Regulation. Report by the Joint Standing Committee on Agriculture. (December 1987).

McCormack, M.L. Jr. Tending and Protection of the Timber Resource on Crown Lands. Statement of Evidence submitted to the Ontario Environmental Assessment Board on behalf of the Ontario Forest Industries Association and the Ontario Lumber Manufacturer's Association. (Jan 1990).

McGee, A.B. and E. Levy. 1988. Herbicide Use in Forestry: Communication and Information Gaps. J.Environ.Manage. 26:111-116.

Meeks, Jr., G. 1990. Pesticide Applications: States Move to Limit Farmer Liability for Groundwater Contamination. NCSL State Legislative Report. Vol. 15, No. 15. 7p.

Mitchell, D.G., P.M. Chapman, and T.J. Long. 1987. Acute Toxicity of Roundup and Rodeo Herbicides to Rainbow Trout, Chinook, and Coho salmon. Bull. Environ. Contam. Toxicol. 39: 1028-1035.

__, __, __. 1987. Seawater Challenge Testing of Coho Salmon Smolts Following Exposure to Roundup Herbicide. Environ. Toxicol. Chem. 6: 875-878.

Neil, C.D., J.S. Williams, and T. K. Weddle. Pilot Study Pesticides in Ground Water. Maine Geological Survey Report. Dept. of Conservation. (1989) 43p.

Newton, M., E.C. Cole, R.A. Lautenschlager, D.E. White, and M.L. McCormack, Jr. 1989. Browse Availability after Conifer Release in Maine's Spruce-Fir Forests. J. Wildl. Manage. 53(3): 643-649.

__, K.M. Howard, B.R. Kelpas, R. Danhaus, C.M. Lottman, and S. Dubelman. 1984. Fate of Glyphosate in an Oregon Forest Ecosystem. J. Agric. Food Chem. 32: 1144-1151.

O'Brian. M. 1986. But What About the Other Half: The Fascinating Tale of (Non-)Inerts. J. Pesticide Reform. (Summer 1986).

__. 1988. Quantitative Risk Analysis: Overused, Under-Examined. J. Pesticide Reform. 8(1): 7-12.

__. 1989. There Goes the Injunction: Herbicides, the Forest Service, and Citizens. J. Pesticide Reform. 9(2): 54-56.

__. 1990. Safe Haven for Pesticide Toxins: List 3 Inerts. J. Pesticide Reform. 9(4): 7-9.

Ontario Environmental Assessment Board. Statements of Evidence submitted on Behalf of the Ontario Ministry of Natural Resources: Statement of Evidence Panel XIII, Maintenance (Protection); and Statement of Evidence Panel XI, Maintenance (Tending) (volumes I & II). (undated).

Oregon State University Cooperative Extension. Pesticides in Ground Water in the United States of America: A Report of a 1988 Survey of State Lead Agencies. (June 15, 1988).

Reynolds, P.E., ed. 1989. Proceedings of the Carnation Creek Herbicide Workshop. Forest Pest Management Institute, Forestry Canada, Sault Ste. Marie, Ontario.

Rhay, T. 1990. Where There's a Will, There's a Way: City Rose Garden Without Insecticides or Fungicides. J. Pesticide Reform. 10(1): 40-41.

Roy, D.N., S.K. Konar, S. Banerjee, D.A. Charles, D.G. Thompson, and R. Prasad. 1989. Persistence, Movement, and Degradation of Glyphosate in Selected Canadian Boreal Forest Soils. J. Agric. Food Chem. 37(2): 437-440.

Sacher, R.M. Safety of Roundup in the Aquatic Environment. Proc. EWRS 5th Symp. on Aquatic Weeds (1978).

Servizi, S.A., R.W. Gordon and D.W. Martens. 1987. Acute Toxicity of Garlon 4 and Roundup Herbicides to Salmon, Daphnia, and Trout. Bull. Environ. Contam. Toxicol. 39: 15-22.

Seymore, R.S. and M.L. McCormack. Having Our Forest and Harvesting It Too. Proc. Joint Meeting, New England Soc. of Amer. Foresters. (March 1989).

Shipp, A.M., M.L. Hogg, K.S. Crump and R. L. Kodell. 1986. Worst Case Analysis Study on Forest Plantation Herbicide Use. Report to Forest Land Management Division, Department of Natural Resources, State of Washington. 367p.

Thompson, D.G., B. Stazni, D.D. Dontaine, T. Mackay, G.R. Oliver, and J. Troth. (in press). Fate of Triclopyr Ester in a Boreal Forest Stream. Environ. Toxicol. and Chem.

Tooby, T.E. 1985. Fate and Biological Consequences of Glyphosate in the Aquatic Environment. in The Herbicide Glyphosate, E. Grossbard and D. Atkinson, eds. Butterworths.

U.S. Dept. of Agriculture. Pesticide Background Statements, Vol. 1, Herbicides. Agriculture Handbook No. 633.

U.S. Dept. of Commerce. 1987 Census of Agriculture. Geographic Area Series. Part 19, Maine. 217p.

U.S. Fish and Wildlife Service. Manual of Acute Toxicity: Interpretation and Data Base for 410 Chemicals and 66 Species of Freshwater Animals. Resource Publication 160.

U.S. General Accounting Office. Lawn Care Pesticides: Risks Remain Uncertain While Prohibited Safety Claims Continue. Report to the Chairman, Subcommittee on Toxic Substances, Environmental Oversight, Research and Development, Committee on Environmental and Public Works, U.S. Senate. (March 1990).

Weed Science Society of America. 1989. Herbicide Handbook of the Weed Science Society of America. Sixth edition. Champaign, IL.

Weiss, L. 1989. Keep Off the Grass, Part II: An Analaysis of State Regulations Governing the Commercial Lawn Care Industry. Report for Public Citizen's Congress Watch. 21p.

Willington, R.P. 1987. Forestry Herbicides and the Aquatic Environment. Forestry Chronicle. Aug.: 250-252.

Witt, T.L. 1985. Risks, Benefits, Perspectives. American Forests. 11.

APPENDIX A

1989 RESOLVES, CHAPTER 98

RESOLVE, To Study the Use of Herbicides

APPROVED | CHAPTER
APR 24 '90 | 98
BY GOVERNOR | RESOLVES

STATE OF MAINE

IN THE YEAR OF OUR LORD
NINETEEN HUNDRED AND NINETY

S.P. 700 - L.D. 1838

Resolve, to Study the Use of Herbicides

Emergency preamble. Whereas, Acts and resolves of the Legislature do not become effective until 90 days after adjournment unless enacted as emergencies; and

Whereas, the use of herbicides in Maine has increased drastically over the last several years; and

Whereas, overuse of herbicides has the potential to reduce the number of wildlife species due to destruction of habitat; and

Whereas, more information is needed in order to assess the current and future results of the increased use of herbicides; and

Whereas, in the judgment of the Legislature, these facts create an emergency within the meaning of the Constitution of Maine and require the following legislation as immediately necessary for the preservation of the public peace, health and safety; now, therefore, be it

Sec. 1. Commission established. Resolved: That the Commission to Study the Use of Herbicides is established; and be it further

Sec. 2. Membership. Resolved: That the commission shall be comprised of the following 13 members: two Senators appointed by the President of the Senate; 3 members of the House of Representatives appointed by the Speaker of the House of Representatives; 2 members representing the forest products industry, one appointed by the President of the Senate and one by

the Speaker of the House of Representatives; 2 members representing the general public, one appointed by the President of the Senate and one appointed by the Speaker of the House of Representatives; and 2 members representing environmental interests, one appointed by the President of the Senate and one appointed by the Speaker of the House of Representatives; the Commissioner of Transportation or the commissioner's designee; and a representative of an electric utility jointly appointed by the President of the Senate and the Speaker of the House of Representatives; and be it further

Sec. 3. **Appointments; meetings. Resolved:** That all appointments be made no later than 30 days following the effective date of this resolve. The Executive Director of the Legislative Council shall be notified by all appointing authorities when the selections have been made. The Chair of the Legislative Council shall call the first meeting of the commission by July 1, 1990. The commission shall select a Legislator from its membership as chair; and be it further

Sec. 4. **Duties. Resolved:** That the commission shall meet 5 times to study the current use of herbicides in Maine and the policy implications of that use. The commission shall review the information on the effects of herbicide use on forests, natural habitats, water quality and other environmental impacts and the implications of the methods of applying those herbicides. In addition, the commission shall hold 2 public hearings throughout the State to hear public comments on the use of herbicides in Maine's forests; and be it further

Sec. 5. **Report. Resolved:** That the commission shall submit its report, together with any recommended legislation, to the First Regular Session of the 115th Legislature by December 1, 1990; and be it further

Sec. 6. **Staff assistance. Resolved:** That the commission shall request from the Legislative Council sufficient staff assistance to carry out these duties. The commission may also call upon the assistance of the Department of Conservation and the Pesticides Control Board; and be it further

Sec. 7. **Reimbursement. Resolved:** That the members of the commission who are Legislators are entitled to receive the legislative per diem and reimbursement for expenses, as defined in the Maine Revised Statutes, Title 3, section 2, for days of attendance at commission meetings, upon application to the Executive Director of the Legislative Council for those expenses.

Emergency clause. In view of the emergency cited in the preamble, this resolve shall take effect when approved.

In House of Representatives, ... 1990

Read and passed finally.

..... Speaker

In Senate, ... 1990

Read and passed finally.

..... President

Approved 1990

..... Governor

APPENDIX B-1

MAJORITY REPORT OF THE COMMISSION

LR 362

AN ACT Regarding the Forestry, Natural Habitat, Water Quality and Environmental Impacts of Pesticide Use.

APPENDIX B-1

MAJORITY REPORT OF COMMISSION

Prohibition on Sales of Certain Produce

Sec. 1. 7 MRSA §530-A is enacted to read:

§530-A. Prohibition on sales

No person may sell or offer for sale any produce treated with a pesticide for which the board has refused, cancelled or suspended registration under section 608, subsection 3, or section 609. A person violating this section is guilty of a civil violation under section 616-A.

Penalties

Sec. 2. 7 MRSA §616-A, sub-§2 is amended to read:

2. Violations. Except as provided in subsection 4, a person violating any provisions of this subchapter or Title 22, chapter 258-A or rules adopted pursuant to this subchapter or Title 22, chapter 258-A commits a civil violation for which the following forfeitures may be adjudged:

A. For the first violation, a forfeiture not to exceed $5,000 ~~$1,500~~; and

B. For each subsequent violation within a 4-year period, a forfeiture not to exceed $10,000 ~~$4,000~~.

Sec. 3. 7 MRSA §616-A, sub-§5 is amended to read:

5. **Criminal violations.** Any person who intentionally or knowingly violates any provision of this subchapter or Title 22, chapter 258-A, any rules adopted under this subchapter or Title 22, chapter 258-A or any restriction of a registration issued pursuant to this subchapter commits a crime punishable by a fine not to exceed $25,000 ~~$7,500~~ and is subject to imprisonment not to exceed 6 months ~~30 days~~, or both, for each violation. Prosecution under this subsection is by summons and not by warrant. A prosecution under this subsection is separate from any action pursued under subsections 2 and 4.

Sec. 4. 7 MRSA §616-A, sub-§10 is repealed.

No-Spray Agreements

Sec. 5. 7 MRSA §625, first ¶, is amended to read:

§625. Right-of-way spraying; no-spray agreements

Any public utility or the Department of Transportation, which maintains a right-of-way through a municipality shall offer a no-spray agreement, with

reasonable provisions, for the municipality to consider if it desires. Any agreement negotiated may include, but is not limited to, the responsibilities of the parties~~, the allocation of costs~~ and the rights and remedies of the parties in the event of default and may apply to all or any part of the right-of-way within the municipality. Any agreement reached under this section must be negotiated in good faith, written and signed by all parties. As part of the no-spray agreement, the municipality may either perform the vegetation control work to standards as provided in the agreement, or else contract with the public utility or the Department of Transportation to conduct the work. If a municipality agrees to perform the vegetation control work under a no-spray agreement, the utility or the Department of Transportation shall pay the municipality an amount equal to the utility's or Department of Transportation's cost of maintaining vegetation control using pesticides in the area specified in the agreement. If the municipality contracts with a utility or the Department of Transportation to conduct vegetation control work under a no-spray agreement, the utility or the Department of Transportation shall discount the cost of the vegetation control service provided to the municipality by an amount equal to the utility's or the Department of Transportation's cost of maintaining vegetation control using pesticides in the area specified in the agreement. Payment under this section must be made at least annually, provided that vegetative management maintenance has been performed according to the conditions of the agreement.

Agricultural Pesticide Research Fund

Sec. 6. 7 MRSA §2401 is enacted to read:

§2401. Agricultural pesticide research fund

1. Fund created. The agricultural pesticide research fund, hereafter referred to as the "fund", is established within the Department of Agriculture for the purpose of funding research by the University of Maine or the Cooperative Extension Service relating to the agricultural use of pesticides and alternatives to agricultural pesticide use. The Commissioner shall use the fund for research in the following areas:

A. Integrated Pest Management;

B. Integrated Crop Management;

C. Low Input Sustainable Agriculture; or

D. Best Management Practices.

The agricultural pesticide research fund is a non-lapsing fund and unexpended balances may carry forward into subsequent years. The Commissioner may credit funds received from any source to the fund, provided that such funds are used for the purposes established under this section. The Commissioner shall report to the Governor, the Joint Standing Committee of the Legislature having jurisdiction over agricultural matters and the Executive Director of the Legislative Council on the use of the funds every two years, beginning on September 15, 1992.

The Commissioner shall adopt rules to implement this section by January 1, 1992.

Forest Pesticide Research Fund

Sec. 7. 12 MRSA §8876, sub-§6 is enacted to read:

6. Research. Identify and fund research relating to the use of pesticides in the forest.

Sec. 8. 12 MRSA §8877-A is enacted to read:

§8877-A. Forest pesticide research fund.

1. Fund created. The forest pesticide research fund, hereafter referred to as the "fund", is established within the Forest Resource Assessment Program for the purpose of funding research needs identified by the council in the following areas:

A. The long term response of preferred tree species to chemical release and chemical site preparation;

B. The comparative costs and yields of forestry harvesting systems, with and without chemicals, over a rotation;

C. The persistence and fate of pesticides in the Maine forest environment;

D. The impact of clearcutting and chemical release on the forest nutrient cycle; or

E. The immediate and long-term direct and indirect impact of pesticide use on wildlife and wildlife habitat diversity.

The fund is a non-lapsing fund and unexpended balances carry forward into subsequent years. The Commissioner may credit funds received from any source to the fund, provided that such funds are used for the purposes established under this section. The commissioner shall include a summary of research funded under this section and a balance statement for the fund in the annual progress report under section 5103 subsection 3.

The Commissioner shall adopt rules to implement this section by January 1, 1992.

Pesticide Regulatory Policy

Sec. 9. 22 MRSA §1471-A is amended to read:

§1471 A. Purpose and policy

For the purpose of assuring to the public the benefits to be derived from the safe, scientific and proper use of chemical pesticides while safeguarding the public health, safety and welfare, and for the further purpose of protecting

natural resources of the State, it is declared to be the policy of the State of Maine to regulate the sale and application of chemical insecticides, fungicides, herbicides and other chemical pesticides, and to regulate the return and disposal of limited and restricted use pesticide containers. It is the policy of the State of Maine to regulate pesticides to reduce the harmful effects of pesticides and to encourage through education and other appropriate means, the reduction of, and alternatives to, pesticide use.

Changes to the Board's Membership

Sec. 10. 22 MRSA §1471-B, sub-§1 is amended to read:

1. Board established. The Board of Pesticides Control is established by Title 5, section 12004-D, subsection 3, within the Department of Agriculture, Food and Rural Resources. Except as provided in this chapter, the board shall be composed of 7 members, appointed by the Governor, subject to approval by the joint standing committee of the legislature having jurisdiction over the subject of agriculture and confirmation by the Legislature. To provide the knowledge and experience necessary for carrying out the duties of the board, one person shall be appointed who has practical experience and knowledge in chemical use in the field of agriculture, one who has practical experience and knowledge in chemical use in the field of forest management, a trained ecologist ~~commercial applicator~~, a person from the medical community, a scientist from the University of Maine System specializing in agronomy or entomology having practical experience and knowledge of integrated pest management and 2 persons appointed to represent the public. ~~The 2 members appointed to represent the public~~ Members shall be selected to represent different geographic areas of the State. The term shall be for 4 years, except that of the initial appointees, 2 shall serve 4-year terms, 2 shall serve 3-year terms, 2 shall serve 2-year terms and one shall serve a one-year term. Any vacancy shall be filled by an appointment for the remainder of the unexpired term.

Pesticide Board Members: Conflict of Interest, Suspension and Removal

Sec. 11. 22 MRSA §1471-B, sub-§§1-A and 1-B are enacted to read:

1-A. Conflict of interest. Members of the Board are governed by the conflict of interest provisions of Title 5, section 18.

1-B. Members: suspension and removal. The director shall immediately notify the board of any investigation of an alleged violation of this chapter or rules adopted under this chapter that involves a member of the Board. Upon notification, if the member involved in the investigation has previously been found guilty of 2 or more civil violations of this chapter or if the allegations may involve a criminal violation of this chapter, the member under investigation is suspended from the board and may not attend any meeting of the board or participate in any matter before the board until:

A. The director notifies the board that the investigation has been terminated without referral to the board; or

B. The board, upon completion of an investigation by the director, determines whether or not a violation occurred.

A member found guilty of a criminal violation or three or more civil violations of this chapter or rules adopted under this chapter is removed from the Board.

Pesticide Applicator Reporting

Sec. 12. 22 MRSA §1471-C, sub-§2-A is enacted to read:

2-A. Applicator. "Applicator" means any person who is a certified commercial applicator or a certified private applicator.

Sec. 13. 22 MRSA §1471-C, sub-§8-A is enacted to read:

8-A. EPA registration number. "EPA registration number" means the registration number assigned to a pesticide product by the United States Environmental Protection Agency pursuant to its authority under FIFRA.

Sec. 14. 22 MRSA §1471-G, sub-§2 is repealed and replaced with the following:

2-A. Applicators and firms to keep records. All applicators and spray contracting firms shall keep contemporaneous records of each pesticide application. A record must include:

A. The product name and EPA registration number of each pesticide used;

B. The amount of each pesticide used, by weight;

C. The date and location of the application;

D. The number of acres of each crop type treated during the application;

E. The method of application; and

F. Any other appropriate information required by the Board by rule.

An applicator shall retain a pesticide application record for a period of at least six years.

3. Applicators and firms to report to the Board. All commercial applicators and spray contracting firms shall submit quarterly pesticide application reports to the Board by the fifteenth day of April, July, October and January of each year. All private applicators shall submit annual pesticide application reports to the Board by the fifteenth day of January of each year. A pesticide application report must include, but is not limited to, the following:

A. The name, certification number and business address of the applicator or spray contracting firm;

B. The beginning and ending date of the reporting period; and

C. For each pesticide used during the reporting period;

(1) The name and EPA registration number of the pesticide;

(2) The total quantity of the pesticide used during the reporting period, by weight; and

(3) The total acres of each crop type treated with the pesticide during the reporting period.

The Board shall prescribe the report form to be used by applicators and spray contracting firms. When reporting to the Board, applicators or spray contracting firm shall use the form prescribed by the Board.

By January 1, 1992, the Board shall adopt rules to implement this section. The Board may, by rule, require that additional information be included in pesticide application records or reports.

4. Report to the Legislature. The Board shall prepare a comprehensive biennial report on pesticide use in the state. The report shall be submitted to the Governor, the Joint Standing Committee of the Legislature having jurisdiction over Natural Resource matters and the Executive Director of the Legislative Council by September 15th of each biennium, beginning in 1992. The report must include:

A. A summary of reported pesticide use by sector and by crop type during the previous two years;

B. A summary of significant regulatory actions taken by the Board during the previous two years;

C. A summary of significant pesticide regulatory actions taken by Congress or the Environmental Protection Agency during the previous two years; and

D. A summary of the progress of programs developed and implemented by the Board.

The report may include recommendations to the Legislature on pesticide control policies, including specific recommendations for any Legislative actions necessary to implement those polices.

Repeal of Reporting Exemption for Sales of Pesticides in Small Containers

Sec. 15. 22 MRSA § 1471-W, sub-§3 is amended to read:

3. Records; reporting. Any person licensed to distribute general use pesticides shall keep and maintain records of annual pesticide

sales for all pesticide products sold. ~~liquid products sold in containers of one quart or more or solid products weighing 5 pounds or more.~~ Those records shall include the name of the pesticide, the EPA registration number of the pesticide ~~the concentration of active ingredients~~ and the quantity sold, and shall be kept on a calendar year basis. The records shall be kept for 2 years after the end of the calendar year. The board may ~~not~~ require record keeping on the sale of household use pesticide products. All general use pesticide dealers shall submit annually a report to the board showing total sales volumes and weights of each pesticide required to be recorded under this subsection. Reports must be submitted on forms prescribed by the Board.

Ground Water Planning and Monitoring

Sec. 16. 22 MRSA §1472 is enacted to read:

§1472. Pesticide ground water protection plan

In cooperation with the Department of Environmental Protection, the Department of Conservation and the Department of Human Services, the board shall prepare a pesticide ground water protection plan. The plan must be consistent with Title 38 section 401 and must provide for on-going monitoring for pesticide residues in ground water aquifers susceptible to pesticide contamination from the proximate and heavy use of pesticides or the proximate use of pesticides with high leaching potential.

The board shall submit the plan to the Governor, the Joint Standing Committee of the Legislature having jurisdiction over Energy and Natural Resource matters and the Executive Director of the Legislative Council by January 1, 1992.

1. Ground water monitoring fund. The ground water monitoring fund, referred to as the "fund", is established within the Board of Pesticides Control to carry out the purposes of this section. The fund is a non-lapsing account and unexpended balances may carry forward into subsequent years. The Commissioner may credit funds received from any source to the fund, provided that such funds are used for the purpose established under this section.

2. Report. The Board shall include a summary of receipts and expenditures from the fund in its biennial report to the Legislature under section 1471-G.

Posting of Treated Areas

Sec. 17. 22 MRSA §1471-R, sub-§3, ¶A, sub¶¶ (1) and (2) are repealed.

Sec. 18. 22 MRSA §1471-R, sub-§3, ¶B is repealed.

Sec. 19. 22 MRSA §1471-X is enacted to read:

1471-X. Posting of areas treated with pesticides.

Any area treated with a pesticide by a pesticide applicator must be posted by the applicator prior to treatment. Any area treated with pesticides by aerial application methods must be posted in accordance with the provisions of section 1471-R subsection 3. Any other area treated with pesticides must be posted in accordance with rules adopted by the Board under this section.

The Board shall adopt rules to implement this section by January 1, 1992. Rules adopted by the Board under this section must establish reasonable timetables and standards for posting any area treated with pesticides, provided that such timetables and standards ensure that a person entering a treated area is informed by such posting that the area is subject to treatment with pesticides.

Any application of a pesticide product listed in section 1471-W, subsection 5, is exempt from the posting requirements of this section.

Training and Certification of Pesticide Users

Sec. 20. 22 MRSA §1471-C, sub-§20-A is enacted to read:

20-A. Pesticide user. "Pesticide user" means any person who applies any pesticide except a pesticide which is a household use pesticide product while under the direct supervision of a certified applicator.

Sec. 21. 22 MRSA §1471-D, sub-§2-C is enacted to read:

2-C. Certification required; pesticide users. After January 1, 1993, no person may apply a pesticide which is not a household use pesticide product unless:

A. That person is a certified pesticide applicator; or

B. That person has been certified as a pesticide user by the Board.

The board shall adopt rules governing the training and certification standards for pesticide users by January 1, 1992. Rules adopted by the board may allow qualified agencies or institutions to train and certify pesticide users, provided that the board approves the training standards to be used.

Right of way pesticide research

Sec. 22. 38 MRSA §480-L is amended to read:

§480-L. Research

The commissioner, in cooperation with other state agencies, is authorized to conduct research and studies to determine how the resource values of resources of state significance can be restored and enhanced.

1. Alternatives to right of way pesticide use. The commissioner shall conduct research on alternatives to right of way pesticide use for vegetation control including, but not limited to, research on the environmental and economic costs and benefits of mechanical vegetation control and substitution planting.

Sec. 23. **Department of Transportation; pesticide research.** The commissioner of the Department of Transportation shall fund research conducted under Title 38, section 480-L, subsection 1, from funds allocated to the Highway Fund under Title 23, section 1651.

Sec. 24. **Public utilities to research alternatives to right of way pesticide use.** Public utilities organized under Title 35 shall conduct research on alternatives to utility right of way pesticide use for vegetation control including, but not limited to, research on the environmental and economic costs and benefits of mechanical vegetation control and substitution planting. A decision by a utility to conduct research under this section is deemed to be prudent. The Public Utilities Commission shall review public utility expenditures under this section.

Transition

Sec. 25. Transition. Notwithstanding any other provision of law, the following provisions apply to the Board of Pesticides Control under Title 22 chapter 258-A.

1. All rules adopted under Title 22 chapter 258-A that do not conflict with the provisions of this Act remain in effect until rescinded or amended by the Board of Pesticides Control or overturned by a court of law.

4. This Act has no effect on the terms of appointment of members of the Board of Pesticides Control except that, on the effective date of this Act, the member of the Board of Pesticides Control appointed as a commercial applicator is removed, to be replaced by the Governor with a trained ecologist under the provisions of Title 22 chapter 258-A.

	1991-92	1992-93
CONSERVATION, DEPARTMENT OF		
Forest Pesticide Research Fund		
All Other	$300,000	
Provides funds to establish the Forest Pesticide Research Fund		
DEPARTMENT OF CONSERVATION		
TOTAL	$300,000	

Sec. 27. Allocation. The following funds are allocated from Other Special Revenue Funds to carry out the purposes of this Act.

	1991-92	1992-93
AGRICULTURE, FOOD AND RURAL RESOURCES, DEPARTMENT OF		
Agricultural Pesticide Research Fund		
All Other	$300,000	
Provides funds for contractual services to the University of Maine or the Cooperative Extension Service for research relating to the agricultural use of pesticides.		
Ground Water Monitoring Fund		
All Other		$ 75,000
Provides funds for contractual services to monitor for pesticide residues in ground water aquifers.		
DEPARTMENT OF AGRICULTURE, FOOD AND RURAL RESOURCES		
TOTAL	$300,000	$ 75,000

CONSERVATION, DEPARTMENT

	1991-92	1992-93
Forest Pesticide Research Fund		
All Other	$300,000	
Provides funds for contractual services for forest pesticide research needs in conjunction with the Forest Resource Assessment Program.		
DEPARTMENT OF CONSERVATION		
TOTAL	$300,000	

Fiscal Note

	1991-92	1992-93
Appropriations/Allocations:		
General Fund	$706,310	$218,080
Other Special Revenue	600,000	75,000
Revenues:		
Other Special Revenue Funds	600,000	75,000

This bill appropriates funds from the General Fund to the Department of Agriculture and the Department of Conservation to establish three Other Special Revenue Funds and provide funding for 4-1/2 new positions. The General Fund appropriations used to establish the new dedicated funds result in an increase in Other Special Revenue. These Other Special Revenue funds are also allocated in this bill for contractual research services.

MINORITY REPORT OF THE COMMISSION

Prohibition on Sales of Certain Produce

Sec. 1. 7 MRSA §530-A is enacted to read:

§530-A. Prohibition on sales

No person may offer for sale any produce treated by a pesticide for which the board has refused, cancelled or suspended registration under section 608, subsection 3, or section 609. A person violating this section is guilty of a civil violation under section 616-A.

Penalties

Sec. 2. 7 MRSA §616-A, sub-§2 is amended to read:

2. Violations. Except as provided in subsection 4, a person violating any provisions of this subchapter or Title 38, chapter 3, subchapter I-A ~~Title 22, chapter 258-A~~ or rules adopted pursuant to this subchapter or Title 38, chapter 3, subchapter I-A ~~Title 22, chapter 258-A~~ commits a civil violation for which the following forfeitures may be adjudged:

A. For the first violation, a forfeiture not to exceed $5,000 ~~$1,500~~; and

B. For each subsequent violation within a 4-year period, a forfeiture not to exceed $10,000 ~~$4,000~~.

Sec. 3. 7 MRSA §616-A, sub-§5 is amended to read:

5. **Criminal violations.** Any person who intentionally or knowingly violates any provision of this subchapter or Title 22, chapter 258-A, any rules adopted under this subchapter or Title 22, chapter 258-A or any restriction of a registration issued pursuant to this subchapter commits a crime punishable by a fine not to exceed $25,000 ~~$7,500~~ and is subject to imprisonment not to exceed 6 months ~~30 days~~, or both, for each violation. Prosecution under this subsection is by summons and not by warrant. A prosecution under this subsection is separate from any action pursued under subsections 2 and 4.

Sec. 4. 7 MRSA §616-A, sub-§10 is repealed.

No-Spray Agreements

Sec. 5. 7 MRSA §625, first ¶, is amended to read:

§625. Right-of-way spraying; no-spray agreements

Any public utility or the Department of Transportation, which maintains a right-of-way through a municipality shall offer a no-spray agreement, with reasonable provisions, for the municipality to consider if it desires. Any agreement negotiated may include, but is not limited to, the responsibilities of the parties~~, the allocation of costs~~ and the rights and remedies of the parties in the event of default and may apply to all or any part of the right-of-way within the municipality. Any agreement reached under this section must be negotiated in good faith, written and signed by all parties. As part of the no-spray agreement, the municipality may either perform the vegetation control work to standards as provided in the agreement, or else contract with the public utility or the Department of Transportation to conduct the work. If a municipality agrees to perform the vegetation control work under a no-spray agreement, the utility or the Department of Transportation shall pay the municipality an amount equal to the utility's or Department of Transportation's cost of maintaining vegetation control using pesticides in the area specified in the agreement. If the municipality contracts with a utility or the Department of Transportation to conduct vegetation control work under a no-spray agreement, the utility or the Department of Transportation shall discount the cost of the vegetation control service provided to the municipality by an amount equal to the utility's or the Department of Transportation's cost of maintaining vegetation control using pesticides in the area specified in the agreement. Payment under this section must be made at least annually, provided that vegetative management maintenance has been performed according to the conditions of the agreement.

Agricultural Pesticide Research Fund

Sec. 6. 7 MRSA §2401 is enacted to read:

§2401. Agricultural pesticide research fund

1. Fund created. The agricultural pesticide research fund, hereafter referred to as the "fund", is established within the Department of Agriculture for the purpose of funding research by the University of Maine or the Cooperative Extension Service relating to the agricultural use of pesticides and alternatives to agricultural pesticide use. The Commissioner shall use the fund for research in the following areas:

A. Integrated Pest Management;

B. Integrated Crop Management;

C. Low Input Sustainable Agriculture; or

D. Best Management Practices.

The agricultural pesticide research fund is a non-lapsing fund and unexpended balances carry forward into subsequent years. The Commissioner may credit funds received from any source to the fund, provided that such funds are used for the purposes established under this section. The Commissioner shall report to the Governor, the Joint Standing Committee of the Legislature having jurisdiction over agricultural matters and the Executive Director of the Legislative Council on the use of the funds every two years, beginning on September 15, 1992.

The Commissioner shall adopt rules to implement this section by January 1, 1992.

Forest Pesticide Research Fund

Sec. 7. 12 MRSA §8876, sub-§6 is enacted to read:

6. Research. Identify and fund research relating to the use of pesticides in the forest.

Sec. 8. 12 MRSA §8877-A is enacted to read:

§8877-A. Forest pesticide research fund.

1. Fund created. The forest pesticide research fund, hereafter referred to as the "fund", is established within the Forest Resource Assessment Program for the purpose of funding research needs identified by the council in the following areas:

A. The long term response of preferred tree species to chemical release and chemical site preparation;

B. The comparative costs and yields of forestry harvesting systems, with and without chemicals, over a rotation;

C. The persistence and fate of pesticides in the Maine forest environment;

D. The impact of clearcutting and chemical release on the forest nutrient cycle; or

E. The immediate and long-term direct and indirect impact of pesticide use on wildlife and wildlife habitat diversity.

The fund is a non-lapsing fund and unexpended balances carry forward into subsequent years. The Commissioner may credit funds received from any source to the fund, provided that such funds are used for the purposes established under this section. The commissioner shall include a summary of research funded under this section and a balance statement for the fund in the annual progress report under section 5103 subsection 3.

The Commissioner shall adopt rules to implement this section by January 1, 1992.

Moving the Board to DEP

Sec. 9. Title 22 chapter 258-A is repealed.

Sec. 10. Title 38, Chapter 3, subchapter I-A is enacted to read:

SUBCHAPTER I-A

BOARD OF PESTICIDES CONTROL

§490-A. Purpose and policy

For the purpose of assuring to the public the benefits to be derived from the safe, scientific and proper use of chemical pesticides while safeguarding the public health, safety and welfare, and for the further purpose of protecting natural resources of the State, it is declared to be the policy of the State of Maine to regulate the sale and application of chemical insecticides, fungicides, herbicides and other chemical pesticides, and to regulate the return and disposal of limited and restricted use pesticide containers. It is the policy of the State of Maine to regulate pesticides to reduce the harmful effects of pesticides and to encourage through education and other appropriate means, the reduction of, and alternatives to, pesticide use.

§490-B. Board of Pesticides Control

1. Board established. The Board of Pesticides Control is established by Title 5, section 12004-D, subsection 3, within the Department of Environmental Protection. Except as provided in this chapter, the board shall be composed of 7 members, appointed by the Governor, subject to approval by the joint standing committee of the legislature having jurisdiction over the subject of natural resources and confirmation by the Legislature. To provide the knowledge and experience necessary for carrying out the duties of the board, one person shall be appointed who has practical experience and knowledge in chemical use in the field of agriculture, one who has practical experience and knowledge in chemical use in the field of forest management, a trained ecologist, a person from the medical community, a scientist from the University of Maine System specializing in agronomy or entomology having practical experience and knowledge of integrated pest management and 2 persons appointed to represent the public. Members shall be selected to represent different geographic areas of the State. The term shall be for 4 years, except that of the initial appointees, 2 shall serve 4-year terms, 2 shall serve 3-year terms, 2 shall serve 2-year terms and one shall serve a one-year term. Any vacancy shall be filled by an appointment for the remainder of the unexpired term.

1-A. Conflict of interest. Members of the Board are governed by the conflict of interest provisions of Title 5, section 18.

1-B. Members: suspension and removal. The director shall immediately notify the board of any investigation of an alleged violation of this chapter or rules adopted under this chapter that involves a member of the Board. Upon notification, if the member involved in the investigation has previously been found guilty of 2 or more violations of this chapter or if the allegations may involve a criminal violation of this subchapter, the member under investigation is suspended from the board and may not attend any meeting of the board or participate in any matter before the board until:

A. The director notifies the board that the investigation has been terminated without referral to the board; or

B. The board, upon completion of an investigation by the director, determines whether or not a violation occurred.

A member found guilty of a criminal violation or three or more civil violations of this chapter or rules adopted under this chapter is removed from the Board.

2. Organization of the board. The board shall elect a chair and any other officers it determines necessary from among the membership. The board shall meet at the call of the chair or at the request of any 3 members. Four members constitute a quorum and, except as otherwise provided in this subsection, any action requires the affirmative vote of the greater of either a majority of those present and voting or at least 2 members. Any action by the board requesting that the Attorney General pursue a court action against an alleged violator of any law or rule requires an affirmative vote by 3 members or a majority of those present and voting, whichever is greater. The chair and any other officers shall serve in those capacities for a period of one year following their elections.

3. Compensation of the board. Each public member shall be compensated according to the provisions of Title 5, chapter 379.

4. Director. The commissioner shall appoint a director, with the approval of the board. The director shall be the principal administrative, operational and executive employee of the board. The director shall attend and participate in all meetings of the board, but may not vote. The director, with the approval of the commissioner and the board, may hire whatever competent professional personnel and other staff he deems necessary. All employees of the board shall be subject to Title 5, Part 2. The director may obtain office space, goods and services as required.

5. Staff. The board must establish standards for the delegation of its authority to the director and staff. Any person aggrieved by a decision of the director and staff has a right to a review of the decision by the board. The Commissioner of Environmental Protection shall provide the board with administrative services of the department, including assistance

in the preparation of the board's budget. The commissioner may require the board to reimburse the department for these services.

6. Registration of pesticides.

7. State contracts. Notwithstanding any other provisions of law, members of the board shall be eligible to contract with the State where the contracts are awarded consistent with normal bidding procedures of the Department of Administration. Members shall also be eligible to receive grants where grants are awarded consistent with normal state procedures. In no case may any member vote on the award of a contract or grant for which he has submitted a bid or proposal.

8. Meetings. The board shall periodically meet in various geographic regions of the State. When considering an enforcement action, the board shall attempt to meet in the geographic region where the alleged violation occurred.

§490 C. Definitions

As used in this chapter, the following words have the following meanings.

1. Agricultural commodity. "Agricultural commodity" means any plant, or part thereof, or animal or animal product produced by a person, including farmers, ranchers, vineyardists, plant propagators, Christmas tree growers, aquaculturists, floriculturists, orchardists, foresters or other comparable persons, primarily for sale, consumption, propagation or other use by humans or animals.

2. Aircraft. "Aircraft" means any machine or device used or designed for navigation of, or flight in, the air.

2-A. Applicator. "Applicator" means any person who is a certified commercial applicator or a certified private applicator.

3. Board. "Board" means the State Board of Pesticides Control as established in section 490-B.

4. Certified applicator. "Certified applicator" means any person who is certified pursuant to section 490-D and authorized to use or supervise the use of any pesticides.

5. Commercial applicator. "Commercial applicator" means any person, except a government pesticide supervisor, whether or not the person is a private applicator with respect to some uses, who uses or supervises the use of any limited or restricted-use pesticides on any property other than as provided by subsection 22, or who uses general-use pesticides in custom application on such property. "Commercial applicator" also includes individuals who apply any pesticides in connection with their duties as officials or employees of federal, state or local governments. The board may by rule provide for exemptions from

licensing requirements and for reduced licensing requirements for classes of commercial applicators of general-use pesticides applied by hand or nonpowered equipment, provided that the board finds that applications by those classes do not pose a significant risk to health or the environment and the requirement of licensing does not serve a meaningful public purpose.

5-A. Commissioner. "Commissioner" means the commissioner of the Department of Environmental Protection.

5-B. Custom application. "Custom application" means any application of any pesticide under contract or for which compensation is received or any application of a pesticide to a property open to use by the public.

6. Defoliant. The term "defoliant" means any substance or mixture of substances intended for causing the leaves or foliage to drop from a plant, with or without causing abscission.

7. Desiccant. The term "desiccant" means any substance or mixture of substances intended for artificially accelerating the drying of plant tissue.

8. Distribute. "Distribute" means to offer for sale, hold for sale, sell, barter, ship, deliver for shipment or receive and, having so received, deliver or offer to deliver pesticides in this State.

8-A. EPA registration number. "EPA registration number" means the registration number assigned to a pesticide product by the United States Environmental Protection Agency pursuant to its authority under FIFRA.

9. FIFRA. "FIFRA" means the Federal Insecticide, Fungicide and Rodenticide Act, 7 U.S.C. 135 et seq., PL 92-516.

10. Fungi. "Fungi" means all nonchlorophyll-bearing thallophytes, that is, all nonchlorophyll-bearing plants, of a lower order than mosses and liverworts, including but not limited to rusts, smuts, mildews and molds, except those on or in living man or other animals or those on or in processed food, beverages or pharmaceuticals.

11. Fungicide. "Fungicide" means any substance or mixture of substances intended for destroying or repelling any fungi or mitigating or preventing damage by any fungi.

11-A. Government pesticide supervisor. "Government pesticide supervisor" means any federal, state or local government agency, official or employee, whether or not the person is a private applicator with respect to some uses, who, in the course of his duties, responsibilities or employment, supervises the use of any pesticides. For the purposes of this subsection, "supervise" means any and all activity other than the direct application of pesticides.

11-B. General use pesticide. "General use pesticide" means any pesticide which has been registered by the United States Environmental Protection Agency as evidenced by a registration number on the label and which is not a restricted use or limited use pesticide, as defined in this section. Pesticides restricted by the United States Environmental Protection Agency are so identified on the label. Pesticides restricted or limited by the Board of Pesticides Control are listed by the board.

11-C. General use pesticide dealer. "General use pesticide dealer" means any person who distributes general use pesticides.

12. Ground equipment. "Ground equipment" means any machine or device, other than aircraft, for use on land or water, designed for, or adaptable to, use in applying pesticides as sprays, dusts, aerosols, fogs, or in other forms.

13. Herbicides. "Herbicides" means any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any weed.

13-A. Household use pesticide product. "Household use pesticide product" means any general use pesticide product which contains no more than 3% active ingredients and which is applied undiluted by homeowners to control pests in and around the family dwelling and associated structures. For the purposes of this definition and section 490-U, subsection 5, petroleum solvents shall not be considered active ingredients.

14. Insect. "Insect" means any of the numerous small invertebrate animals generally having the body more or less obviously segmented, for the most part belonging to the class insecta, comprising 6-legged, usually winged forms, including but not limited to beetles, bugs, bees, flies and other allied classes of arthropods whose members are wingless and usually have more than 6 legs, including but not limited to mites, ticks, centipedes and wood lice.

15. Insecticide. "Insecticide" means any substance or mixture of substances intended for destroying or repelling any insect, or mitigating or preventing damage by any insects.

16. Limited use pesticide. "Limited use pesticide" means any pesticide or pesticide use classified for limited use by the board.

16-A. Major forest insect aerial spray application. "Major forest insect aerial spray application" means a project to apply pesticides against a forest insect pest by aerial application over an area containing at least 1,000 acres in the aggregate.

16-B. Minor forest insect aerial spray application. "Minor forest insect aerial spray application" means a project to apply pesticides against a forest insect pest by aerial application over an area containing less than 1,000 acres in the aggregate.

16-C. Monitor. "Monitor" means a person working on a public or private forest insect aerial spray application project whose primary responsibilities are to observe and record meteorological conditions during spray operations, observe and record spray deposition, prepare the spray period report and who has the authority to cease spray applications when conditions require it.

17. Person. "Person" means any individual, partnership, association, fiduciary, corporation, governmental entity or any organized group of persons whether incorporated or not.

18. Pest. The term "pest" means any insect, rodent, nematode, fungus, weed, or any other form of terrestrial or aquatic plant or animal life or virus, bacteria or other micro-organism, except viruses, bacteria or other micro-organisms on or in living man or other living animals, which the commissioner declares to be a pest.

19. Pesticide. The term "pesticide" means any substance or mixture of substances intended for preventing, destroying, repelling or mitigating any pest, and any substance or mixture of substances intended for use as a plant regulator, defoliant or desiccant.

20. Pesticide dealer. "Pesticide dealer" means any person who distributes limited or restricted use pesticides.

21. Plant regulator. The term "plant regulator" means any substance or mixture of substances intended, through physiological action, for accelerating or retarding the rate of growth or rate of maturation, or for otherwise altering the behavior of plants or the produce thereof, but shall not include substances to the extent that they are intended as plant nutrients, trace elements, nutritional chemicals, plant inoculants and soil amendments. Also, the term "plant regulator" shall not be required to include any of such of those nutrient mixtures or soil amendments as are commonly known as vitamin hormone horticultural products, intended for improvement, maintenance, survival, health and propagation of plants, and as are not for pest destruction and are nontoxic and nonpoisonous in the undiluted packaged concentration.

22. Private applicator. "Private applicator" means any person who uses or supervises the use of any pesticide which is classified for restricted or limited use for purposes of producing any agricultural commodity on property owned or rented by him or his employer or, if applied without compensation other than trading of personal services between producers of agricultural commodities, on the property of another person.

23. Restricted use pesticide. "Restricted use pesticide" means any pesticide or pesticide use classified for use only by or under the direct supervision of a certified applicator by the Administrator of the United States Environmental Protection Agency or by the Commissioner of Agriculture, Food and Rural Resources.

23-A. Spotter. "Spotter" means a person working on a public or private forest insect aerial spray application project who is responsible for ordering the cessation of spraying over water bodies and other nontarget areas.

23-B. Spray contracting firm. "Spray contracting firm" means a person, as defined in this section, employed or contracted to conduct a public or private pesticide application. This term does not include the owner or lessee of land to be sprayed, employees of that landowner or lessee, the Bureau of Forestry, the employees of the Bureau of Forestry or individuals who are certified as commercial applicators.

23-C. Spray period. "Spray period" means any period of a forest insect aerial spray application project during which pesticides are applied and which is demarcated from another spray period by at least a 2-hour cessation in pesticide application.

24. Under the direct supervision of a certified applicator. "Under the direct supervision of a certified applicator," unless otherwise prescribed by its labeling, means the act or process by which a pesticide is applied by a competent person acting under the instructions and control of a certified applicator who is available, if and when needed, even though such certified applicator is not physically present at the time and place the pesticide is applied. In the case of an application made by a commercial applicator, the certified applicator must be physically present at the time and on the site of the application.

24-A. Pesticide user. "Pesticide user" means any person who applies any pesticide which is a household use pesticide product while under the direct supervision of a certified applicator.

25. Weed. "Weed" means any plant which grows where not wanted.

§490 D. Certification and licenses

1. Certification required; commercial applicators and spray contracting firms. Certification is required for commercial applicators and spray contracting firms as follows.

A. No commercial applicator may use or supervise the use of any pesticide within the State without prior certification from the board, provided that a competent person who is not certified may use such a pesticide under the direct supervision of a certified applicator; and

B. No spray contracting firm may use or supervise the use of any pesticide within the State without prior certification from the board.

2. Certification required, private applicators. No private applicator shall use or supervise the use of any limited or restricted use pesticide without prior certification from the board, provided, that a competent person who is not certified may use such a pesticide under the direct supervision of a certified applicator.

2-A. Certification required; government pesticide supervisor. No government pesticide supervisor may supervise the use of any pesticide without prior certification from the board, provided that the person who actually uses the pesticide must be certified.

2-B. Certification required; spotters and monitors. No person may:

A. Act as a spotter without prior certification from the board; or

B. Act as a monitor without prior certification from the board.

2-C. Certification required; pesticide users. After January 1, 1993, no person may apply a pesticide which is not a household use pesticide product unless:

A. That person is a certified pesticide applicator; or

B. That person has been certified as a pesticide user by the Board.

The board shall adopt rules governing the training and certification standards for pesticide users by January 1, 1992. Rules adopted by the board may allow qualified agencies or institutions to train and certify pesticide users, provided that the board approves the training standards to be used.

3. License required, pesticide dealers. No pesticide dealer shall:

A. Distribute any limited or restricted use pesticide without a distributor's license from the board; or

B. Distribute limited or restricted use pesticides to any person who is not licensed or certified by the board.

4. Application. Application for licenses or certification shall be accompanied by such a reasonable fee as the board may establish by regulation. The applicant shall provide such information regarding the applicant's qualifications and proposed operations and other relevant matters as required by the board. Commercial applicators and spray contracting firms shall be required by the board to provide proof of financial responsibility in custom application as to such amounts as the board may, by regulation, designate; private applicators may also be required to provide such proof. All applicants to the board for certification or licensing shall be required to comply with such standards of competency as are established by the board concerning adequate knowledge of pesticide distribution or use and the related dangers and necessary precautions; provided that, in the case of applicants for commercial certification and pesticide dealers' licenses, such compliance shall be demonstrated by written examination in addition to such other criteria, including performance testing, as the board may establish.

5. **Issuance.** No license or certification may be issued by the board, unless the board determines that the standards for licensing and certification have been met as to those categories for which the applicant has applied and qualified. In the case of the spotter and monitor, the board shall set minimal proficiency requirements with the understanding that the board may choose to change these standards from time to time. The enforcement personnel of the Board of Pesticides Control shall be certified to meet at least the minimal proficiency requirements required of spotters and monitors. If a license or certification is not issued as applied for, the board shall provide written notice to the applicant of the reasons therefor. The license or certificate may be issued upon such terms and conditions as the board deems necessary for the protection of the public health, safety and welfare, and for enforcement and administration of this chapter and the rules promulgated pursuant to this chapter.

6. **Renewal.** Certification of commercial applicators, government pesticide supervisors, spotters, monitors, spray contracting firms and licenses of pesticide dealers shall be valid for one year from the date of issuance. Certification of private applicators shall be valid for such period as prescribed by the board by regulation. Application for renewal shall be accompanied by such reasonable fee as the board may by regulation require. The board may, by regulation, require that such renewal application include reexamination or other procedures designed to assure a continuing level of competence to distribute, use or supervise the use of pesticides safely and properly.

If the board fails to renew a license upon application of the licensee or certificate holder, it shall afford the licensee or certificate holder an opportunity for a hearing in conformity with Title 5, chapter 375, subchapter IV.

7. **Suspension.** License and certification suspensions are governed by the following provisions.

A. If the board determines that there may be grounds for revocation of a license or certificate, it may temporarily suspend said license or certificate pending inquiry and opportunity for hearing, provided that such suspension shall not extend for a period longer than 45 days.

B. The board shall notify the licensee or certificate holder of the temporary suspension, indicating the basis therefor and informing the licensee or certificate holder of the right to request a public hearing.

C. If the licensee or certificate holder fails to request a hearing within 20 days of the date of suspension, such right shall be deemed waived. If the licensee or certificate holder requests such a hearing, notice shall be given at least 20 days prior to the hearing to the licensee or certificate holder and to appropriate federal and state agencies. In addition, public notice shall be given by publication in a newspaper of general circulation in the State and such other publications as the board deems appropriate.

D. This subsection shall not be governed by the provisions of Title 4, chapter 25 or Title 5, chapter 375.

8. Revocation. The Administrative Court may suspend or revoke the certification or license of a licensee or certificate holder upon a finding that the applicant:

A. Is no longer qualified;

B. Has engaged in fraudulent business practices in the application or distribution of pesticides;

C. Used or supervised the use of pesticides applied in a careless, negligent or faulty manner or in a manner which is potentially harmful to the public health, safety or welfare or the environment;

D. Has stored, transported or otherwise distributed pesticides in a careless, faulty or negligent manner or in a manner which is potentially harmful to the environment or to the public health, safety or welfare;

E. Has violated the provisions of this chapter or the rules and regulations issued hereunder;

F. Has made a pesticide recommendation, use or application, or has supervised such use or application, inconsistent with the labelling or other restrictions imposed by the board;

G. Has made false or fraudulent records or reports required by the board under this chapter or under regulations pursuant thereto;

H. Has been subject to a criminal conviction under section 14 (b) of the amended FIFRA or a final order imposing a civil penalty under section 14 (a) of the amended FIFRA; or

I. Has had the license or certificate, which supplied the basis for the Maine license or certification pursuant to subsection 10, revoked or suspended by the appropriate federal or other state government authority.

9. State, federal and local government employees. Individuals who apply pesticides in connection with their duties as officials or employees of federal, state or local governments are subject to the provisions of this chapter concerning licenses and certification, but are exempt from the payment of any fee.

10. Nonresident licenses. The board may issue a license or certificate without examination to nonresidents who are licensed or certified by another state or the Federal Government substantially in accordance with the provisions of this chapter. Licenses or certificates issued pursuant to this subsection may be suspended or revoked in the same manner and on the same grounds as other

licenses or certificates issued pursuant to this chapter. Licenses and certificates issued pursuant to this subsection may be suspended or revoked pursuant to subsection 8, paragraph I.

11. Arborists. In the case of persons licensed under Title 32, chapter 29, subchapter II, the board may waive the application fee and may consider the arborist license as prima facie evidence of qualification to use pesticides in the categories of use provided by Title 32, chapter 29.

§490 E. Aquatic application, permit required

No person shall apply or cause to be applied a pesticide to the waters of the State without obtaining a waste discharge license from the Department of Environmental Protection pursuant to Title 38, chapter 3, subchapter I, Article 2.

§490 F. Critical areas

No person shall apply pesticides to any area of the State which the board has determined to be a critical area, except to the extent such application is within the limits prescribed by the board in establishing the area.

§490 G. Reports

1. Pesticide dealers to maintain certain records. All pesticide dealers shall maintain records of pesticide distribution for a period of at least 2 years and shall provide such reports and information as the board may, by regulation, require.

2-A. Applicators and firms to keep records. All applicators and spray contracting firms shall keep contemporaneous records of each pesticide application. A record must include:

A. The product name and EPA registration number of each pesticide used;

B. The amount of each pesticide used, by weight;

C. The date and location of the application;

D. The number of acres of each crop type treated during the application;

E. The method of application; and

F. Any other appropriate information required by the Board by rule.

An applicator shall retain a pesticide application record for a period of at least six years.

3. Applicators and firms to report to the Board. All commercial applicators and spray contracting firms shall submit quarterly pesticide application reports to the Board by the fifteenth day of April, July, October and January of each year. All private applicators shall submit annual pesticide application reports to the Board by the fifteenth day of January of each year. A pesticide application report must include, but is not limited to, the following:

A. The name, certification number and business address of the applicator or spray contracting firm;

B. The beginning and ending date of the reporting period; and

C. For each pesticide used during the reporting period;

(1) The name and EPA registration number of the pesticide;

(2) The total quantity of the pesticide used during the reporting period, by weight; and

(3) The total acres of each crop type treated with the pesticide during the reporting period.

The Board shall prescribe the report form to be used by applicators and spray contracting firms. When reporting to the Board, applicators or spray contracting firm shall use the form prescribed by the Board.

By January 1, 1992, the Board shall adopt rules to implement this section. The Board may, by rule, require that additional information be included in pesticide application records or reports.

4. Report to the Legislature. The Board shall prepare a comprehensive biennial report on pesticide use in the state. The report shall be submitted to the Governor, the Joint Standing Committee of the Legislature having jurisdiction over Natural Resource matters and the Executive Director of the Legislative Council by September 15th of each biennium, beginning in 1992. The report must include:

A. A summary of reported pesticide use by sector and by crop type during the previous two years;

B. A summary of significant regulatory actions taken by the Board during the previous two years;

C. A summary of significant pesticide regulatory actions taken by Congress or the Environmental Protection Agency during the previous two years; and

D. A summary of the progress of programs developed and implemented by the Board.

The report may include recommendations to the Legislature on pesticide control policies, including specific recommendations for any Legislative actions necessary to implement those polices.

§490 H. Inspection

Upon presentation of appropriate credentials, the chair or any member of the board or any authorized employee or consultant of the board may enter upon any public or private premises at reasonable times for the purpose of inspecting any equipment, device or apparatus used in applying pesticides; inspecting storage and disposal areas; inspecting or investigating complaints of injury to persons or land from pesticides; observing the use and application of pesticides; sampling pesticides in use or storage; and sampling pesticide residues on crops, foliage, soil, water or elsewhere in the environment. Upon denial of access to the board or its agents, the board or its agents may seek an appropriate search warrant in a court of competent jurisdiction. Notwithstanding other provisions of this section, a board member or any authorized employee or consultant of the board may enter public or private premises without notification if an emergency exists. The need to take a residue sample in a timely manner constitutes an emergency under this section.

§490 J. Penalties

A person who violates any provision of this chapter or any order, rule, decision, certificate or license issued by the board or commits any act constituting a ground for revocation, except acts punishable under section 490-D, subsection 8, paragraphs A and H, commits a civil violation subject to the penalties established in Title 7, section 616-A.

§490 K. Appeal

Any person aggrieved by any action of the board may obtain a review thereof by filing in the Superior Court, within 30 days of notice of the action, a written petition praying that the action of the board be set aside. A copy of such petition shall forthwith be delivered to the board, and within 30 days thereafter the board shall certify and file in the court a transcript of evidence received, whereupon the court shall have jurisdiction to affirm, set aside or modify the action of the board, except that the findings of the board as to the facts, if supported by substantial evidence, shall be conclusive.

§490 L. Subpoenas

The board may issue subpoenas to compel the attendance of witnesses and production of such books, documents and records anywhere in the State in any hearing affecting the authority or privilege granted by a license or permit issued under this chapter, as may be relevant to proceedings of the board. If any person refuses to obey a subpoena issued by the board under this section, the board may apply to any Justice of the Superior Court for an order compelling such person to comply with the requirements of the subpoena. Such justice may issue such order and may punish failure to obey the same as a contempt thereof.

§490 M. Powers of board

1. Establishment of categories and standards. The board shall, by regulation promulgated in conformity with Title 5, chapter 375, subchapter II:

A. Establish categories, and where applicable subcategories, of commercial pesticide applicators and government pesticide supervisors depending upon the nature and extent of the pesticide use, the type of pesticide equipment, the degree of knowledge or skill required in their application and such other factors as the board deems relevant, provided that such categories shall be consistent with, but not limited to, the categories established by the United States Environmental Protection Agency;

B. Establish competency standards for the established categories for the certification and renewal of certification of commercial applicators. Such standards shall require, as a minimum, that the applicant demonstrate, by written examination and, as appropriate, performance testing, knowledge of pests, formulation and labelling of pesticides, equipment and application techniques, safety precautions, potential harmful effects on the environment, and applicable federal and state laws and regulations.

C. Establish standards for the certification and renewal of certification of private applicators. Such standards shall require that the private applicator indicate satisfactory knowledge of pest problems and pest control practices, including as a minimum the ability to recognize common pests and the damage they cause, to understand the pesticide label, to apply pesticides in accordance with label instructions and warnings, to recognize local environmental situations that must be considered to avoid contamination, to recognize poisoning symptoms and corrective procedures, and to understand applicable federal and state laws and regulations.

D. Establish the standards for issuance and renewal of licenses of pesticide dealers. These standards shall include, but not be limited to, requirements concerning transportation of pesticides, the applicant's knowledge of applicable federal and state statutes and regulations, and the applicant's understanding of the dangers involved and the precautions necessary for the safe storage and distribution of pesticides;

E. Establish guidelines and requirements for reporting of information by commercial applicators, pesticide dealers, spray contracting firms and monitors to the board;

F. Establish standards for the certification and renewal of certification of government pesticide supervisors. These standards may require that the applicant demonstrate, by written examination and, as appropriate, performance testing, knowledge of pests, formulation and labeling

of pesticides, equipment and application techniques, safety precautions, potential harmful effects on the environment and applicable federal and state laws and regulations.

G. Establish standards for the certification and renewal of certification of spotters and monitors; and

H. Establish standards for the certification and renewal of certification of spray contracting firms.

2. Designation of critical areas; cooperation; promulgation of rules and regulations. The board may:

A. Cooperate with any other agency of this State or its subdivisions, or with any agency of any other state or the Federal Government for the purpose of administering this chapter and of securing uniformity of regulations;

B. On its own or in cooperation with other agencies or persons, publish such information as it deems appropriate, including information concerning injury which might result from improper application or handling of pesticides, and methods and precautions designed to prevent the injury; and

C. Promulgate such other rules and regulations and take such other actions as it deems appropriate to control the use and distribution of pesticides within the State and to otherwise provide that the purposes and policies of this chapter are insured.

3. Chemical substance identification. To the extent permitted under federal law, the board shall have primary enforcement responsibility for inspection of any workplace subject to the provisions of Title 26, chapter 22, solely because of the presence of a pesticide. The board shall have primary enforcement responsibility for training programs to be provided by employers under Title 26, chapter 22, in those instances where the employer is subject to the provisions of that law solely because of the presence or use of a pesticide.

The board shall assist the Director of the Bureau of Labor Standards in providing education and training in accordance with Title 26, section 1720, to aid agricultural employers in complying with the federal requirements for hazard communication and shall assist the responsible state agencies in providing education and training to aid agricultural employers in complying with the federal requirements for emergency and hazardous chemical inventory forms and community right-to-know reporting.

4. Designation of critical areas. The board may designate critical areas which shall include, but not be limited to, areas where pesticide use would jeopardize endangered species or critical wildlife habitat, present an unreasonable threat to quality of the water supply, be contrary to a master plan for the area where such area is held or managed by an agency of the State or Federal Government, or would otherwise result in unreasonable adverse effects on the

public health, welfare or the environment of the area. The designation of a critical area may prohibit pesticide use or may include such limitations on such use as the board deems appropriate. The proceedings to designate a critical area under this section shall conform to Title 5, chapter 375, subchapter II.

The board, by rule, shall establish criteria for designation of critical areas by March 1, 1989.

In addition to the provisions of the Maine Administrative Procedure Act, Title 5, section 8001, any municipality and, for the purpose of representing unorganized territory, any county may petition the board for establishment of a critical area within their boundaries. If the board designates a critical area, the board shall develop a pesticide management plan for that area after receiving comments from the municipality or, for unorganized territory, the county; the volunteer medical advisory panel as established through the board; local applicators; owners of land within the critical area; and other interested parties and agencies.

5. Disclosure of rights. When issuing a license, the board shall provide to each licensee a written statement outlining the enforcement process and the process of negotiating agreements in lieu of court action that may occur in the event enforcement action is pursued. The Department of the Attorney General and the Department of Agriculture, Food and Rural Resources shall assist the board in developing an appropriate written statement. The board shall make this information available to all existing licensees within 30 days of the effective date of this section.

6. Notification. Whenever the board or its staff investigates a complaint alleging a violation of rules adopted pursuant to Title 7, section 606, subsection 2, paragraph G, the staff shall make all reasonable efforts to notify the alleged violator, if identity is known, prior to collecting samples.

§490 N. Chemical control of vertebrate animals

It shall be unlawful to use poisons to kill vertebrate land animals except as hereinafter provided.

1. Chemical control of vertebrate animals. The board may grant permits to use poisons for chemical control of vertebrate animals to members of its staff and to agents of the U.S. Fish and Wildlife Service.

2. Chemical control of rodents.

3. Use poisons to control wild dogs. The board, its staff or agents may in emergencies, use poisons to control wild dogs or other wild animals.

4. Control of rats and mice. The control of rats and mice on public and private property including buildings and municipal dumps, and the control of English sparrows, starlings and pigeons within buildings, is exempt from this section, provided that the control is performed in accordance with this chapter, the regulations of the board and the directions on the label of the registered pesticide employed.

§490 O. Exercise of powers by Board of Pesticides Control

The powers established under the Maine Pesticide Control Act of 1975, Title 7, chapter 103, subchapter II-A, shall be exercised by the Board of Pesticides Control established by section 490-B.

§490 P. Storage of illegal and obsolete pesticides

1. Board to accept illegal and obsolete pesticides. Within the limits of resources made available to it for the storage or disposal of illegal and obsolete pesticides purchased for use in Maine, the board shall accept, store and dispose of pesticides from persons who purchased them with the intent of applying them.

2. Board may adopt rules and fees. The board may adopt any rules necessary to implement this section, including rules limiting the quantity and nature of pesticides it accepts for storage or disposal. The board may adopt and charge fees for storage or disposal of pesticides presented to it where the amount of pesticides, or special treatments necessary for safe storage or disposal, will require a substantial cost to the board; provided, that the fees charged are close to the actual cost incurred by the board.

§490 Q. Return and disposal of limited and restricted use pesticide containers

1. Purpose. The purpose of this section is to insure the triple rinsing or equivalent of limited and restricted use pesticide containers in accord with the board's regulations, and provide an incentive through a deposit system for the return of triple rinsed pesticide containers. All limited and restricted use pesticide containers shall have a sticker supplied by the board. That sticker shall be used to identify those limited and restricted use pesticide containers for which a deposit is required.

2. Scope. This section applies to all limited and restricted use pesticide containers, excluding those packaged in a cardboard, fiberboard or paper container, which are sold, bartered or traded within the State, or which, though purchased out-of-state, are held for use or used within the State.

3. Deposit established. The board shall by rule establish a deposit for restricted and limited use pesticide containers within the scope of this section which are sold, bartered or traded within the State, or which, though

purchased out-of-state, are held for use or used within the State. The deposit amount should be sufficient to promote the return of the limited and restricted use pesticide containers.

These regulations adopted by the board in accordance with the Maine Administrative Procedure Act, Title 5, chapter 375, shall thereafter be in effect until 90 days after the date of adjournment of the next regular session of the Legislature, unless the next regular session shall adopt by legislative enactment that regulation.

4. Deposits collected. For pesticide containers within the scope of this section and purchased within the State, pesticide dealers shall, at the time of purchase, collect the deposit established by the board for each such pesticide container. For pesticide containers within the scope of this section which, though purchased out-of-state, are held for use or used within the State, deposits established by the board shall be collected and held by the board or its agent, as provided by the board in its rules.

5. Stickers required. Upon the sale, trade or barter of any pesticide container subject to this section and purchased in the State, the pesticide dealer shall affix a sticker supplied by the board to identify those containers. For pesticide containers subject to this section which, though purchased out-of-state, are held for use or used within the State, the person who has ownership or control of the container within the State shall obtain and affix a sticker supplied by the board or its agent and shall pay a deposit to the board or its agent in accordance with procedures prescribed by the board by rule. The sticker shall indicate that the deposit has been paid and shall be designed in accord with the board's rules.

The board may charge a reasonable fee, in addition to the required deposit, to pay for the cost of producing and distributing stickers.

After April 1, 1985, it shall be unlawful for any person to possess a limited or restricted use pesticide container subject to this section without a properly approved and affixed sticker, except pesticide dealers and distributors may hold containers if they are for sale and not for personal use.

6. Deposits refunded. Deposits will be refunded by pesticide dealers on all pesticide containers bearing the board's stickers at the place of business of the pesticide dealer who sold, bartered or traded the restricted or limited use pesticide, or if purchased out-of-state, by the board or its agent, or at a place otherwise established by regulation, provided that the containers have been triple rinsed or the equivalent in accord with the board's regulations prior to return.

7. Authority to adopt rules. The board may promulgate rules and take such other actions as it deems necessary to carry out the provisions of this section.

§490 R. Notification and monitoring

1. Purpose. The purpose of this section is to protect the public health and safety by requiring a system of notification to the public and to the board for forest insect aerial spray projects and by improving the monitoring of these projects.

2. Scope. The requirements of this section apply to public and private forest insect aerial spray pesticide applications.

3. Notification to the public. Prior to the commencement of a forest insect aerial spray application, notice shall be given to the public as follows.

A. If the project is a major forest insect aerial spray application, as defined in section 490-C, the notification shall be as follows.

(1) Notice shall be conspicuously posted at each point of major ingress and egress of the public into the area to be sprayed, including, without limitation, marked foot trails known to be used by the public and roads accessible to 4-wheeled vehicles and open to the public. The notice shall contain the information described in subparagraph (1). The board shall determine the time period the notice shall be posted prior to the commencement and following the completion of the spray project.

B. Notice shall otherwise be provided, as required by rule or order of the board, when that board determines additional notification procedures to be necessary to reach the affected public.

4. Notification to the board. Written notice shall be given to the board:

A. At least 15 days, but not more than 30 days, prior to the commencement of a major forest insect aerial spray application; or

B. At least 5 days prior to the commencement of a minor forest insect aerial spray application.

The notice shall contain the information required under subsection 3, paragraph A, subparagraph (1), and shall also include any other information which is required by the board. The notice shall be on such form as the board may prescribe.

5. Reports. The following reports shall be prepared.

A. Following the completion of each spray period, a written spray period report prepared by the monitor, as defined in section 490-C, shall be made available to the board within a reasonable time period established by the board.

The report shall describe the spray activity, shall certify the area actually sprayed and the pesticide used, weather conditions at the time, a map showing where spray booms were turned on and off and any nontarget areas that were sprayed, and the date and time on which spraying took place. The report shall be on such form and filed in accordance with such procedure as the board may prescribe.

B. In the event that a reportable spray incident occurs, a spray incident report shall be telephoned to the board immediately following the completion of each spray period. A reportable spray incident is a misapplication which may result in a potential threat to public health or the environment, including, without limitation: Failure to turn off spray booms over sensitive areas such as water bodies or human habitation; aircraft accidents involving chemical spills; and accidental discharge of insecticide, causing risk to human health. The report shall be on such form and filed in accordance with such procedure as the board may prescribe.

The spray contracting firm or applicator shall be responsible for complying with the requirements of this section.

C. A project report as described in the board's regulations shall be filed in accordance with such procedure as the board may prescribe.

6. **Responsibility**. The following parties shall be responsible for complying with the requirements of this section, unless otherwise noted:

A. In the case of a forest insect aerial spray program administered pursuant to Title 12, chapter 803, the Bureau of Forestry; and

B. In the case of any other forest insect aerial spray activities, the landowner or the landowner's representative, or, if the land is leased, the lessee.

§490 S. Requirement for spotters and monitors

Major public and private forest insect aerial spray projects shall employ spotters and monitors, as defined in section 490-C. These personnel shall be certified pursuant to section 490-D, subsection 2-B. At least one spotter and one monitor shall be with each spray aircraft or spray aircraft team during all spray application activities. A spotter or monitor shall not serve as the pilot of any aircraft involved in the spray project.

§490 T. Exemption

The board may exempt a person from compliance with one or more of the requirements of sections 490-R and 490-S, if the board finds that the exemption will not result in any unreasonable risk to the public's health, safety or

general welfare and is otherwise in the public interest. Any request for exemption shall be made in writing to the board and shall state the reasons for the request. The board shall not grant any exemption, except following notice to the public and opportunity for hearing. Notice and opportunity for hearing shall be in a manner as the board may prescribe and may be at variance with the requirements of the Maine Administrative Procedure Act, Title 5, chapter 375, to the extent that the board deems necessary under the circumstances.

§490 U. Municipal ordinances

1. Centralized listing. The Board of Pesticides Control shall maintain for informational purposes, for the entire State, a centralized listing of municipal ordinances that specifically apply to pesticide storage, distribution or use.

2. Existing ordinances. The clerk of any municipality which, on the effective date of this section, has an ordinance to be listed under subsection 1 shall file a copy of that ordinance with the board by December 31, 1988.

3. New ordinances. The clerk of the municipality shall provide the board with notice and a copy of any ordinance to be listed under subsection 1 at least 7 days prior to the meeting of the legislative body or the public hearing at which adoption of the ordinance will be considered. The clerk shall notify the board within 30 days after adoption of the ordinance.

4. Intent. It is the intent of this section to provide information on municipal ordinances. This section shall not affect municipal authority to enact ordinances.

5. Failure to file. For any ordinance which is not filed with the board, with notice given to the board in accordance with this section, which is otherwise valid under the laws of this State, any provision that specifically applies to storage, distribution or use of pesticides shall be considered void and of no effect after the deadline for filing and until the board is given proper notice and the ordinance is filed with the board.

§490 V. Local participation

1. Representation. When the board, under section 1471-M, considers the designation of a critical area or the establishment of a pesticide management plan for a critical area, the municipal officers of any affected municipality, or county commissioners in the case of unorganized territories, shall be given the opportunity to select a local representative to serve as an additional board member. For a given action, there shall be only one local representative who shall represent the affected municipality or unorganized territory.

2. Participation and voting procedure. A local representative appointed under this section may participate officially and vote in deliberations on the designation of a critical area or on the establishment of a pesticide management plan only for a critical area which is in the municipality or unorganized territory represented. A local representative may participate on the board until final designation of the critical area or final establishment of the pesticide management plan, including any administrative or judicial appeals. When the board considers a proposed critical area or pesticide management plan that affects more than one municipality, the board shall take separate action on the portion in each municipality.

3. Compensation. Local representatives shall be reimbursed only for expenses as regular board members during the period of their service, to be paid by the board.

§490 W. General use pesticide dealers

1. License required. Unless exempted under subsection 5, no person may distribute general use pesticides without a license.

2. Issuance of license. The Board of Pesticides Control shall issue a license to distribute general use pesticides to any person upon payment of a fee of $20 for a calendar year or any part of a calendar year. Any person licensed to distribute restricted use pesticides shall be considered licensed to distribute general use pesticides without any additional fee. All fees collected under this section shall be deposited in the Board of Pesticides Control Special Fund.

3. Records; reporting. Any person licensed to distribute general use pesticides shall keep and maintain records of annual pesticide sales for all pesticide products sold. Those records shall include the name of the pesticide, the EPA registration number of the pesticide and the quantity sold, and shall be kept on a calendar year basis. The records shall be kept for 2 years after the end of the calendar year. The board may not require record keeping on the sale of household use pesticide products. All general use pesticide dealers shall submit annually a report to the board showing total sales volumes and weights of each pesticide required to be recorded under this subsection. Reports must be submitted on forms prescribed by the board.

4. Violations; penalty.

5. Exemptions. The following situations are exempt from the provisions of this section.

A. Any person may distribute the following products without a general use pesticide dealer license:

(1) Household use pesticide products with no more than 3% active ingredients;

(2) The following products, which have limited percentages of active ingredients:

(a) Dichlorovos (DDVP) impregnated strips with concentrations not more than 25% in resin strips and pet collars;

(3) The following products with unlimited percentages of active ingredients:

(a) Pet supplies such as shampoos, tick and flea collars and dusts;

(b) Disinfectants, germicides, bactericides and virucides;

(c) Insect repellents;

(d) Indoor and outdoor animal repellents;

(e) Moth flakes, crystals, cakes and nuggets;

(f) Indoor aquarium supplies;

(g) Swimming pool supplies;

(h) Pediculocides and mange cure on man;

(i) Aerosol products; and

(j) General use paints, stains, and wood preservatives and sealants.

B. The board may promulgate rules to exempt the sale of additional general use pesticide products from the dealer licensing provisions of this section.

490-X. Posting of areas treated with pesticides.

Any area treated with a pesticide by a pesticide applicator must be posted by the applicator prior to treatment. Any area treated with pesticides by aerial application methods must be posted in accordance with the provisions of section 490-R subsection 3. Any other area treated with pesticides must be posted in accordance with rules adopted by the Board under this section.

The Board shall adopt rules to implement this section by January 1, 1992. Rules adopted by the Board under this section must establish reasonable timetables and standards for posting any area treated with pesticides, provided that such timetables and standards ensure that a person entering a treated area is informed by such posting that the area is subject to treatment with pesticides.

Any application of a pesticide product listed in section 490-W, subsection 5, is exempt from the posting requirements of this section.

§490 Y. Pesticide ground water protection plan

In cooperation with the Department of Environmental Protection, the Department of Conservation and the Department of Human Services, the board shall prepare a pesticide ground water protection plan. The plan must be consistent with Title 38 section 401 and must provide for on-going monitoring for pesticide residues in ground water aquifers susceptible to pesticide contamination from the proximate and heavy use of pesticides or the proximate use of pesticides with high leaching potential.

The board shall submit the plan to the Governor, the Joint Standing Committee of the Legislature having jurisdiction over Energy and Natural Resource matters and the Executive Director of the Legislative Council by January 1, 1992.

1. Ground water monitoring fund. The ground water monitoring fund, referred to as the "fund", is established within the Board of Pesticides Control to carry out the purposes of this section. The fund is a non-lapsing account and unexpended balances may carry forward into subsequent years. The Commissioner may credit funds received from any source to the fund, provided that such funds are used for the purpose established under this section.

2. Report. The Board shall include a summary of receipts and expenditures from the fund in its biennial report to the Legislature under section 490-G.

Transition

Sec. 11. Transition. Notwithstanding any other provision of law, the following provisions apply to the Department of Agriculture, Food and Rural Resources and the transfer of pesticide regulatory authority and programs under the Board of Pesticides Control to the Department of Environmental Protection.

1. All accrued expenditures, assets, liabilities, balances of appropriations, allocations, transfers, revenues or other available funds in any account or subdivision of any account of the Board of Pesticides Control under Title 22 chapter 258-A must be transferred to the proper accounts in the Department of Environmental Protection by the State Controller upon the request of the State Budget Officer.

2. All agreements, leases, contracts or licenses issued under Title 22 chapter 258-A prior to the effective date of this Act continue to be valid under the terms of issuance until they expire or are rescinded, amended or revoked.

3. All rules adopted under Title 22 chapter 258-A that do not conflict with the provisions of this Act remain in effect until rescinded or amended by the Board of Pesticides Control or overturned by a court of law.

4. This Act has no effect on the terms of appointment of members of the Board of Pesticides Control except that, on the effective date of this Act, the member of the Board of Pesticides Control appointed as a commercial applicator is removed, to be replaced by the Governor with a trained ecologist under the provisions of this Act.

5. Employees of the Board of Pesticides Control under Title 22 chapter 258-A are transferred to the Board of Pesticides Control under Title 38 chapter 3, subchapter I-A and shall:

A. Retain their accrued fringe benefits, including vacation and sick leave and health and life insurance benefits;

B. If members of collective bargaining units on the effective date of this Act, remain as members in their respective bargaining units and retain all rights, privileges and benefits provided by their collective bargaining agreements with respect to state service while employed with the Board of Pesticides Control; and

C. Remain as members of the Maine State Retirement System.

6. The Commissioner of the Department of Environmental Protection and the Commissioner of the Department of Agriculture, Food and Rural Resources shall determine the best method of resolving any legal, fiscal, personnel or operational conflict created as a result of this Act and shall submit necessary statutory recommendations to correct any conflict to the Second Regular Session of the 115th Legislature.

Right of way pesticide research

Sec. 11. 38 MRSA §480-L is amended to read:

§480-L. Research

The commissioner, in cooperation with other state agencies, is authorized to conduct research and studies to determine how the resource values of resources of state significance can be restored and enhanced.

1. Alternatives to right of way pesticide use. The commissioner shall conduct research on alternatives to right of way pesticide use for vegetation control including, but not limited to, research on the environmental and economic costs and benefits of mechanical vegetation control and substitution planting.

Sec. 12. **Department of Transportation; pesticide research.** The commissioner of the Department of Transportation shall fund research conducted under Title 38, section 480-L, subsection 1, from funds allocated to the Highway Fund under Title 23, section 1651.

Sec. 13. **Public utilities to research alternatives to right of way pesticide use.** Public utilities organized under Title 35 shall conduct research on alternatives to utility right of way pesticide use for vegetation control including,

but not limited to, research on the environmental and economic costs and benefits of mechanical vegetation control and substitution planting. A decision by a utility to conduct research under this section is deemed to be prudent. The Public Utilities Commission shall review public utility expenditures under this section.

Statement of Fact

This bill is the minority report of the Commission to Study the Use of Herbicides, established by Resolves 1989, chapter 98. The bill moves the Board of Pesticides Control from the Department of Agriculture, Food and Rural Resources to the Department of Environmental Protection and would prohibit the sale of produce treated with pesticides banned in Maine; increase penalties for pesticide violations; require the MDOT and utilities to pay municipalities their avoided costs when entering into no-spray agreements (municipalities would be responsible for any costs above the MDOT's or utility's avoided costs); require research into agricultural, forestry and right of way alternatives to pesticides use; require ground water protection planning and establish a pesticide ground water monitoring fund; amend the State's pesticide regulatory policy; change the membership of the Board of Pesticides Control and establish procedures for suspending and removing members who violate pesticide regulations; require pesticide applicators to report to the board and require the board to report biennially to the Legislature; require training and certification of pesticide users, and; repeal the exemption for pesticide dealer reporting of pesticides sold in small containers.

Appropriations & Allocations

Sec. 14. **Appropriation.** The following funds are appropriated from the General Fund to carry out the purposes of this Act.

	1991-92	1992-93
AGRICULTURE, FOOD AND RURAL RESOURCES, DEPARTMENT OF		
Agricultural Pesticide Research Fund		
All Other	$300,000	
Provides funds to establish the Agricultural Pesticide Research Fund.		
DEPARTMENT OF AGRICULTURE, FOOD AND RURAL RESOURCES TOTAL	$300,000	
ENVIRONMENTAL PROTECTION, DEPARTMENT OF		
Ground Water Monitoring Fund		
All Other		$ 75,000
Provides funds to establish the ground water monitoring fund.		
Board of Pesticides Control		
Positions	(4.5)	(4.5)
Personal Services	$ 92,060	$134,080
All Other	6,750	9,000
Capital	7,500	
	$106,310	$143,080
Provides funds for a toxicologist, an assistant toxicologist, a programmer analyst, a data entry specialist, a part-time data entry specialist, general operating expenses and computer equipment.		

	1991-92	1992-93
DEPARTMENT OF ENVIRONMENTAL PROTECTION TOTAL	$106,310	$218,080
CONSERVATION, DEPARTMENT OF		
Forest Pesticide Research Fund		
All Other	$300,000	
Provides funds to establish the Forest Pesticide Research Fund		
DEPARTMENT OF CONSERVATION TOTAL	$300,000	

Sec. 15. **Allocation.** The following funds are allocated from Other Special Revenue Funds to carry out the purposes of this Act.

AGRICULTURE, FOOD AND RURAL RESOURCES DEPARTMENT OF	
Agricultural Pesticide Research Fund	
All Other	$300,000
Provides funds for contractual services to the University of Maine or the Cooperative Extension Service for research relating to the agricultural use of pesticides.	
AGRICULTURE, FOOD AND RURAL RESOURCES, DEPARTMENT OF TOTAL	$300,000

	1991-92	1992-93
ENVIRONMENTAL PROTECTION, DEPARTMENT OF		
Ground Water Monitoring Fund		
All Other		$ 75,000
Provides funds for contractual services to monitor for pesticide residues in ground water aquifers.		
DEPARTMENT OF ENVIRONMENTAL PROTECTION TOTAL	0	$ 75,000
CONSERVATION, DEPARTMENT OF		
Forest Pesticide Research Fund		
All Other	$300,000	
Provides funds for contractual services for forest pesticide research needs in conjunction with the Forest Resource Assessment Program.		
DEPARTMENT OF CONSERVATION TOTAL	$300,000	

Fiscal Note

	1991-92	1992-93
Appropriations/Allocations:		
General Fund	$706,310	$218,080
Other Special Revenue	600,000	75,000
Revenues:		
Other Special Revenue Funds	600,000	75,000

This bill transfers the Board of Pesticides Control from the Department of Agriculture, Food and Rural Resources to the Department of Environmental Protection. This transfer will require additional appropriations, deappropriations, allocations and deallocations. The exact amounts can not be determined at this time.

Also, this bill appropriates funds from the General Fund to the Department of Environmental Protection and the Department of Conservation to establish three Other Special Revenue Funds and provide funding for 4-1/2 new positions. The General Fund appropriations used to establish the new dedicated funds result in an increase in Other Special Revenue. These Other Special Revenue funds are also allocated in this bill for contractual research services.

APPENDIX C

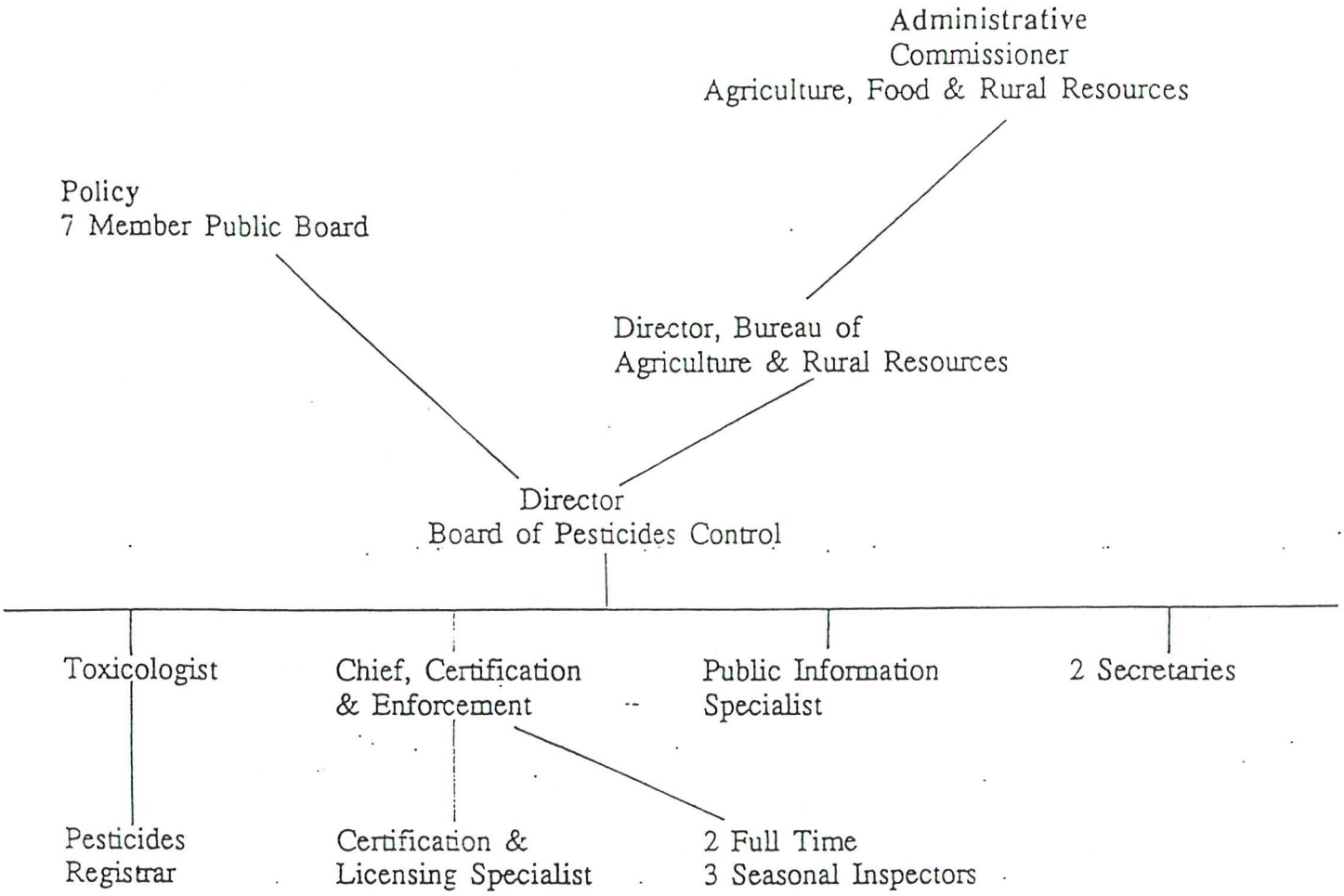
Organizational Chart of the Board of Pesticides Control and a listing of Staff.

14. Staffing

The Board is a relatively small agency, with 10 full time and three seasonal positions. A listing of the staff, their title, the accounts they are paid from and the number of years service with the Board are listed below.

Employee	Title	Working Title	Account	Years W/BPC
Rob't I. Batteese, Jr.,	Director	Director	1108.3	14
Henry S. Jennings	Environmental Specialist IV	Chief, Certification & Enforcement	3108.3 4108.3	6
Lebelle R. Hicks	Toxicologist	Pesticides Toxicologist	4108.3	.5
Wesley C. Smith	Biologist I	Pesticides Registrar	4108.3	8
Gary D. Fish	Environmental Specialist III	Certification & Licensing Specialist	4108.3	2
Paul R. Gregory	Public Relations Specialist	Public Information Officer	4108.3	.75
Raymond G. Connors	Oil & Hazardous Materials Specialist I	Pesticides Inspector	4108.3	3
Ernest G. DeRaps	"	"	3108.3	10
Roger A. Beaulieu	Pesticide Control Technician (seasonal)	Pesticides Inspector	4108.3	3
Dale V. Fowler	"	"	3108.3	2
Vacant	"	"	3108.3	
Jennifer L. Paul	Clerk Steno III	Office Manager	4108.3	6
M. Dawn Charest	Clerk Typist II	Secretary	4108.3	6

The organizational chart is as follows.



As indicated in Section 2, the Board has been fortunate to receive three very important new positions since 1987. These are the Certification and Licensing Specialist, the Toxicologist and the Public Information Officer. The Board is very pleased with these new employees and believes they have already demonstrated very valuable contributions to their programs.

The Board has also been very fortunate to hire dedicated employees. As a consequence, there has been very little turnover in staff. The one weakness concerns the seasonal inspectors' positions where one vacancy currently exists because the employee left for a full time job. The Board has tried to minimize this problem by hiring semi-retired persons. In the future, the workload is expected to increase to the point where additional enforcement staffing will be necessary.

APPENDIX D

Analysis of FIFRA and Pre-emption Issues.

MARTHA E. FREEMAN, DIRECTOR
WILLIAM T. GLIDDEN, PRINCIPAL ANALYST
JULIE S. JONES, PRINCIPAL ANALYST
DAVID C. ELLIOTT, PRINCIPAL ANALYST
GILBERT W. BREWER
TODD R. BURROWES
GRO FLATEBO
DEBORAH C. FRIEDMAN
JOHN B. KNOX

PATRICK NORTON
HARTLEY PALLESCHI
MARGARET J. REINSCH
PAUL J. SAUCIER
JOHN R. SELSER
HAVEN WHITESIDE
JILL IPPOLITI, RES. ASST.
BARBARA A. MCGINN, RES. ASST.
BRET A. PRESTON, RES. ASST.

STATE OF MAINE
OFFICE OF POLICY AND LEGAL ANALYSIS
ROOM 101/107/135
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TEL.: (207) 289-1670

September 25, 1990

TO: Herbicide Commission
FROM: Margaret J. Reinsch, Esq., Legislative Analyst

Re: Local pesticide regulation and FIFRA

INTRODUCTION

For several years the question of whether political subdivisions (counties, municipalities, etc.) of states are authorized under federal law to regulate pesticides has been open to debate. A subcommittee of the Joint Standing Committee on Agriculture examined the issue in 1987, paying particular attention to a few then-recent cases which did not conclusively settle the issue. Earlier this year, the Maine Supreme Judicial Court issued an opinion upholding local regulation. Because of the disagreement among the state and federal courts which have ruled on the issue, however, it is doubtful that the final word has been spoken.

This memo provides a brief discussion of the issue of preemption of local pesticide regulation and the several court decisions addressing it.

FIFRA

The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) (7 U.S.C. §136 et seq.) comprehensively regulates the manufacture, distribution, sale and use of pesticides. FIFRA specifically precludes states from regulating the labeling and packaging of pesticides (7 U.S.C. §136v(b)), but allows state regulation in other areas of the sale and use of pesticides as long as the state regulation is more stringent than the minimum federal standards contained in the Act. Specifically, 7 U.S.C. §136v(a) provides:

> A State may regulate the sale or use of any federally registered pesticide or device in the State, but only if and to the extent the regulation does not permit any sale or use prohibited by this chapter.

It is clear, therefore, that FIFRA contemplates state action in the field of pesticide regulation. What is not as obvious is the Congressional intent regarding pesticide regulation by the political subdivisions of states. Although Congress did discuss the issue

of local regulation, it provided no definitive resolution, and no clear language was included in the statute in 1975, when the issue was debated, nor in any of the subsequent amendments. Because FIFRA contains no express direction as to whether counties and municipalities are prohibited or permitted to act, and because there is not agreement over the meaning of the legislative history, it is not surprising that, when confronted with this issue, courts have reached varying conclusions.

CASES

People ex rel. Deukmejian v. Mendocino County (1984)

The California Supreme Court handed down the first major decision on federal preemption of local pesticide regulation in 1984. California asked the court to prohibit enforcement of Mendocino County's initiative ordinance prohibiting aerial application of phenoxy herbicides. The State argued that both California pesticide law and FIFRA preempted the county's ordinance.

The California Supreme Court upheld the ordinance. It read FIFRA's silence on local regulation as evidence of a compromise position adopted by Congress. Because FIFRA neither expressly authorizes nor prohibits local regulation, the California court determined that Congress left the decision up to states whether political subdivisions would have any role in the regulation of pesticides.

863 P.2d 1150 (Cal. 1984).

Maryland Pest Control Association v. Montgomery County, Maryland (1987)

In 1986, two pesticide industry associations challenged posting and notification ordinances adopted by Montgomery and Prince George's counties in Maryland. The federal district court for the district of Maryland struck down the ordinances based on the language of FIFRA and its legislative history. The court found that because FIFRA made a distinction elsewhere in the statute in the use of the terms "state" and "political subdivision," the fact that §136v(b) specifically permits "states" to adopt pesticide regulations means that FIFRA does not permit "political subdivisions" to regulate pesticides. The court found support for that reading in the legislative history. The United States Court of Appeals for the Fourth Circuit summarily affirmed the federal district court's decision in an unpublished opinion.

646 F.Supp. 109 (D.Md. 1986), aff'd without opinion, 822 F.2d 55 (4th Cir. 1987).

COPARR, Ltd v. City of Boulder (1989)

An association of commercial pesticide applicators and a property owner who used and contracted for the application of pesticides challenged two ordinances adopted by the City of Boulder, Colorado. One ordinance essentially provided for local enforcement of many aspects of the federal and state pesticide statutes, and was struck down by the federal district court in Colorado. The other ordinance imposed notification requirements for the airborne application of pesticides. The federal district court adopted the California court's reading of FIFRA, and upheld the notification ordinance because it did not conflict with the federal and state regulatory scheme.

735 F.Supp. 363 (D.Colo. 1989)

Central Maine Power Company v. Town of Lebanon (1990)

In March of 1990, the Supreme Judicial Court in Maine took up the issue of FIFRA preemption of town ordinances. The Town of Lebanon enacted an ordinance which prohibited the commercial application of pesticides for nonagricultural uses, unless the use was first approved by a Town Meeting vote. Central Maine Power Company challenged the ordinance because the company was precluded from using herbicides to control vegetative growth along a utility corridor it owned in the town.

The Court ruled that neither the state statute nor FIFRA preempted Lebanon's ordinance. The court refused to find that the absence of any mention of local governments in the section of FIFRA which expressly delegates regulatory authority to the states effectively superseded traditional notions of state sovereignty in determining how to allocate state power among the states and their subdivisions. The Law Court agreed with the analysis of the California Supreme Court and the federal district court in Colorado in finding that the legislative history is inconclusive.

571 A.2d 1189 (Me. 1990)

Mortier v. Town of Casey (1990)

A land owner who wanted to spray a portion of his own land joined with several other persons to challenge a Casey, Wisconsin, ordinance. The restriction precluded aerial spraying and limited the land area which could be sprayed. The Supreme Court of Wisconsin held, although not unanimously, that the legislative history of FIFRA revealed the clear intent of Congress to preempt all local regulation of the use of pesticides. The dissenters concluded that Congress had failed to demonstrate a clear and manifest purpose to deprive local government of its powers under the federal constitution, and would have ruled in favor of local regulation.

452 N.W.2d 555 (Wis. 1990)

Professional Law Care Association v. Village of Milford (1990)

The latest decision in this area was handed down by the United States Court of Appeals for the Sixth Circuit on August 1st of this year. The Village of Milford, Michigan, adopted an ordinance requiring the registration of commercial pesticide users and detailed notification procedures. The federal district court for the district of Michigan ruled that the ordinance is impliedly preempted by FIFRA. The Sixth Circuit agreed, relying on the fact that FIFRA mentions political subdivisions in some provisions but the section expressly delegating authority to the states does not also expressly extend that authority to political subdivisions.

59 USLW 2111 (6th Cir. 1990)

SUMMARY

Two state supreme courts and one federal district court have held that FIFRA does not preempt political subdivisions of states from adopting their own pesticide regulations, provided those regulations do not conflict with either the substantive FIFRA provisions or the provisions of the state pesticide statutes. Maine is one of the states in this group, so Maine municipalities are free to regulate the sale and use of pesticides within the parameters of FIFRA, the Maine Pesticide Control Act (7 MRSA §601 et seq.) and the Maine Board of Pesticide Control Act (22 MRSA §1471-A et seq.).

Two federal circuit courts and one state supreme court have found that FIFRA does preempt local regulation of pesticides. Under these decisions, the relationship between the local regulation and the federal and state laws is irrelevant; the political subdivisions, the courts ruled, have been denied by Congress the power to adopt any regulation.

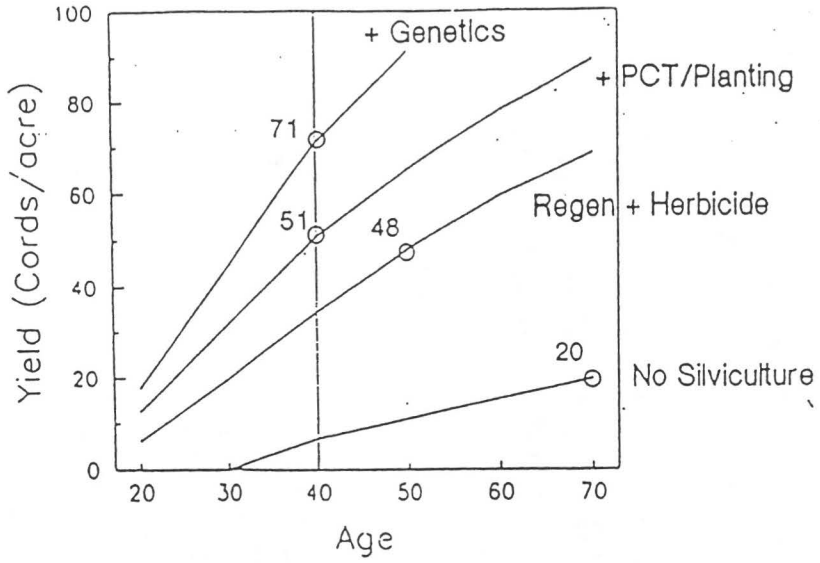
Congress, with every opportunity to address the divergent interpretations of FIFRA, chose not to address the issue in the 1988 amendments to FIFRA. Preliminary indications are that the issue of local preemption is not high on the priority list of subjects to be settled as the next FIFRA amendments are being prepared for 1991. If Congress will not clarify the issue, the only recourse for a final, definitive resolution is the United States Supreme Court. As of this date, no appeal is pending before the Court.

Until either Congress or the U.S. Supreme Court acts, the Maine Supreme Judicial Court opinion in *Lebanon* is the law of the land in Maine. It is important to note, however, that the question of local preemption by FIFRA is one of interpretation of the federal law and its legislative history; therefore, although a federal court decision would not technically overrule a differing state court decision within the same jurisdiction, it may have persuasive value to a state court. State courts, as a matter of policy, usually follow the lower federal court decisions on federal questions; the only federal court the state supreme courts must follow is the United States Supreme Court. *See* Littlefield v. State of Maine, Department of Human Services, 480 A.2d 731, 737 (Me. 1984). A decision by the federal district court for the district of Maine or by the First Circuit Court of Appeals in favor of preemption, therefore, while not overruling the *Lebanon* decision, may make the Maine Supreme Judicial Court rethink its position.

APPENDIX E

Forestry Study Yield Data

Yield Assumptions



To illustrate the potential of high-yield silviculture, four scenarios were used, tabulated by Greenwood et al. (1988). The "NO SILVICULTURE" yield curve was derived from unpublished data obtained in the most recent USDA Forest Service resurvey of Maine (Powell and Dickson 1984). It represents historical, empirical yields of spruce and fir only (no other species) from six million acres of spruce-fir forest type.

The four curves represent four scenarios for spruce-fir stands assumed to be growing on site-index 60 land (average height of dominant trees to reach 60 feet in 50 years) which is considered above-average for the spruce-fir region. The curves represent projected yields (cords of merchantable wood/acre) over stand age (years). The vertical line at age 40 represents a desirable rotation length with high intensity silviculture.

The bottom curve represents natural spruce-fir stand development with no silviculture whatsoever. At age 50 it would yield about 10 cords/acre with an anticipated yield of 20 cords at age 70. The three higher curves represent incremental (cumulative) additions of silvicultural treatments which illustrate the prerequisite nature of herbicide technology to carrying out further silvicultural improvements.

The term "Regen" indicates an improvement in stocking of natural regeneration to 80%. The term "+ Herbicide" indicates a timely herbicide treatment to maintain that regeneration in a free-to-grow condition. With these improvements, a yield of 48 cords/acre is expected at age 50.

In the next higher curve the term "+PCT/Planting" indicates increased stocking to 90% and crop tree spacing controlled by either precommercial thinning (PCT) of fully stocked natural stands or by planting trees for plantation production. With this scenario 51 cords/acre is expected at age 40. To attain the highest yielding scenario ("+ Genetics" with 71 cords/acre at age 40), yields of the planting scenario were increased by 40% to represent results of an intensive clonal tree-improvement program.

Source: *Seymour, R.S. and M.L. McCormack, Jr.* (1989). Having Our Forest and Harvesting It Too: The Role of Intensive Silviculture in Resolving Forest Land Use Conflicts. Forest and Wildlife Management in New England. What Can We Afford? Proc. Joint Meeting, New England Soc. of Amer. Foresters, Me. Chap. The Wildlife Soc., and Atl. Int. Chap. Amer. Fisheries Soc. Portland, Me. 15-17 March 1989, p. 208

TABLE 10

28 AND 32 YEAR RESPONSE OF BALSAM FIR

28 Year Response after Chemical Release (2,4-D / 2,4,5-T mixture)
32 Year Response after Manual Release

Plot	Treatment	Total Fir Vol (m3/ha)	Basal Area (m2/ha)	Mean dbh (cm)
15	Chemical Release	191.4	44.7	10.8
16	Chemical Release	134.8	36.6	9.3
17	Control (Chem. Rel.)	52.4	23.3	8.3
18	Manual Release	95.4	17.9	14.6
19	Control (Man. Rel.)	58.2	11.4	11.1

Response

A. Chemical Release:
265% greater fir volume than the control 28 years later. (Plot 15)
157% greater fir volume than the control 28 years later. (Plot 16)

B. Manual Release:
64% greater fir volume than the control 32 years later. (Plot 18)

SOURCE: MACLEAN, D. A. AND MORGAN, M. G., 1983. LONG-TERM GROWTH AND YIELD RESPONSE OF YOUNG FIR TO MANUAL AND CHEMICAL RELEASE FROM SHRUB COMPETITION. FOR. CHRON. 59(4):177-183.